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HEARING BEFORE SENATE FACT-FINDING COMMITTEE

ON PUBLIC HEALTH AND SAFETY

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In the Matter of

THE RECREATIONAL USE OF DOMESTIC WATER SUPPLIES; hearing,

San Luis Obispo, ~~California~~

May 2, 1962

BEFORE:

Senator John F. Thompson

Senator Vernon Sturgeon

and Senator Aaron Quick

ALSO PRESENT:

Della Bradfield, Executive-Secretary

Muriel Porter

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PROCEEDINGS

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The Hearing before the Senate Interim Fact-Finding Committee on Public Health and Safety, held at San Luis Obispo, California, was called to order by Senator Vernon Sturgeon, Chairman, at 9:30 o'clock a.m., on Wednesday, May 2, 1962, and the following proceedings were had:

SENATOR STURGEON: This hearing will be in order. This is a subcommittee of the senate committee, Senate Fact-Finding Committee on Public Health and Safety. We are studying the subject, The Recreational Use of Domestic Water Supplies. This is the first of three hearings. The other two hearings, one will be held in San Francisco and one in Los Angeles I imagine sometime in the fall. I would suggest to the committee that it would be in September or October.

I will start by introducing the committee. On my far right is Senator Jack Thompson from Santa Clara County. Senator Thompson is the Chairman of the full Public Health and Safety Committee in the senate and has been, I think, for the last eight or ten years, long enough, anyway, that anything that you want to give blame or credit to, Senator Thompson had something to do with it.

Next to Senator Thompson is the Executive Secretary of the committee, Della Bradfield. She is the one who is going to have to write the report when this testimony is all in.

On my left is Senator Aaron Quick from Imperial County. He and I are of the same vintage in the senate.

I, of course, am Senator Sturgeon representing San Luis Obispo County, and Senator Thompson was kind enough to assign this subject to me.

I called the first hearing for San Luis Obispo County in the hope that the testimony that is presented here today will be beneficial to the local bodies who, at this particular time, have a direct interest. I want to make it very clear that this committee is not here today to try the case of Santa Margarita Lake. Santa Margarita Lake is a local problem. It is a small part of a very large subject throughout the State of California. This is a state-wide subject. No decision will be made here today. In fact, this committee is truly a fact-finding committee. We can make no decisions except to decide, amongst the committee, whether or not there is a need for additional legislation.

Now, should the committee find there is such a need, the legislation will be introduced in the 1963

session. So this is not a hurry up thing. We will digest this testimony, and we feel we have some very competent witnesses here today, and I want to thank every one of them at this time for being here.

With that, I think we will start with our first witness, Dr. Harper, the Public Health Officer for the County of San Luis Obispo, and he has asked to come on first because he has a busy day ahead of him.

One more thing I would like to say before Dr. Harper starts: The transcript of this hearing will be available, and if you want a copy of it, make your request directly to Mr. Bill Rittinger who is our court reporter here today.

And one more man I would like to introduce before we go any further is our sergeant at arms for the day, Officer Hildebrand, who is loaned to us very kindly by the California Highway Patrol.

Dr. Harper.

DR. HARPER: I am Dr. George L. Harper, County Health Officer of San Luis Obispo County. I wish to thank you, sir, for the opportunity to appear before this sub-committee and to testify regarding the recreational use of domestic water supply reservoirs. As a preface to the body of my statement, I would like to advise that as County Health Officer, I have primary responsibility for

communicable disease control throughout the County of San Luis Obispo and the municipalities therein, as directed by the State Health and Safety Code. In regards to community water supplies having over two hundred service connections, the local Health Department shares responsibility for the safety of the water with the State Health Department.

This is a somewhat lengthy dissertation, but the importance of the problem and of this occasion demand full and thorough treatment of the subject. In addition, the position which I have taken in this matter may appear to many people whom are not fully informed in these matters to be somewhat extreme, and therefore comprehensive development of the topic is necessary to demonstrate that my position is based in fact and is a realistic interpretation of the available evidence. Some phrases which are used were not selected for maximum delicacy but are technically correct, and I believe the time has come in this issue to stop pulling punches and present the unvarnished facts to this senate committee and to the public.

While it is generally agreed that this public health problem involves both hazards of disease transmission and aesthetic considerations, my chief concern is the problem of preventing the transmission of

disease through domestic water supplies. You will find appended to this statement material which elaborates, verifies and supports statements I shall make.

I. Establishing the chain of transmission of water-borne disease.

A. It is established fact that human excrement - feces and urine - (and to some extent sputum) carry great quantities of organisms capable of causing human disease after transmission by water. This is true not only in the case of excrement from overtly sick persons, but frequently in people either with mild infections (medically termed inapparent or sub-clinical cases) and "carriers", both latter categories manifesting good health and as eager as anyone to enjoy swimming, fishing, picnicking or other outdoor activities.

The diseases which have definitely been transmitted by water are caused by microorganisms, bacteria, viruses or protozoa. Some of these diseases prevalent in California are dysentary, typhoid fever, poliomyelitis, meningitis and infectious hepatitis. You will recognize these as serious diseases, each carrying a certain mortality rate. Certain viruses are found in the

feces of a case or a carrier to the extent of 1,000,000 infective units per cubic centimeter, perhaps 500,000,000 - ½ billion - organisms for a large bowel movement. Estimates are not available where urine or sputum could be the transmitting medium.

B. It has been found impossible to prevent people on these water supply reservoirs from heeding the call of nature and contaminating the water or the water-shed, regardless of restrictions and control efforts made to prevent such behavior. Title 17 of the California Administrative Code contains specific regulations intended to provide controls for minimizing this kind of contamination, but unfortunately the minimum which has been attainable has been more than is acceptable and a realistic evaluation of the results indicates that control measures have fallen far short of living up to their promise as they are stated in plans and proposals.

This should come as no great surprise - it would have been extremely naive to have anticipated otherwise and this must be regarded as mis-placed confidence and unrealistic planning.

At this point I would like to quote from a

statement of Charles E. Smith, M.D., Dean, School of Public Health, University of California and President, California State Board of Public Health. This statement was read to the Conference on Recreational Use of Impounded Water at Richmond, California, in 1956. "However, experience with water supply reservoirs in California now used recreationally has demonstrated that absolute control of such waste has never been achieved. In the event of laxity feces may be deposited on water-shed land. The hazard from this is obvious: Falling rains and surface runoff will carry this material into the reservoir and the resulting organisms may travel to the point of water intake from the reservoir and, unless destroyed or removed by treatment, ultimately flow to the customer."

On the local scene, using Salinas Reservoir as a case in point, we have had verbal testimony of incidents of human excrement contamination of the reservoir or the water-shed and in fact, while it is notoriously difficult to obtain, we do have documentation of this kind of activity at the park. It would be unrealistic to believe that with moderate or heavy public use of these parks

C. The factors of detention time, dilution and sedimentation in the reservoirs are represented as an important safety factor which produces dispersal and dying-off of whatever disease-causing organisms might enter the lake. In addition restricted zones or closed areas are established well ahead of the intake works which theoretically prevents direct introduction of contaminating materials into the intake. There is no question that there is a significant protective factor here, but unfortunately it is largely theoretical, based on volumetric calculations of each reservoir and not on thorough field studies which would determine what surface and subsurface currents occur from time to time.

I refer to the restricted area protective factor as theoretical because people are known to enter this area and engage in unauthorized activities. We have documentation of this for Salinas Reservoir.

So-called short circuits can occur in these reservoirs and are capable of carrying materials from points in the lake legally open to public use to the water intake perhaps in a matter of

days so that millions of infectious hepatitis viruses or poliomyelitis viruses could be transported from a contaminating mass at some higher point on the lake to the water outlet still in healthy condition and capable of causing disease.

When infected feces or urine are deposited into the water, or washed into the reservoir, the material will be dispersed by bacteriologic activity, by forces of wind and wave action, thermal currents and near-surface water agitation by boats. The quantity of reservoir water any one deposition may disperse into will be from a few gallons to hundred of thousands, perhaps millions of gallons of water - each gallon containing quantities of microorganisms capable of infecting human beings. (Only one virulent organism being necessary to cause disease in a susceptible individual.)

D. Treatment at the water plant:

Water treatment plants currently in use were designed to eliminate and deactivate organisms which were known at the time design was developed to cause human disease and to be transmittable by water, namely protozoa and bacteria. Viruses were

known, but the knowledge was largely experimental, and since the study of viruses was pretty much in its infancy until approximately 1954, little could be done to design water treatment plants to effectively eliminate or deactivate these organisms.

Again I would like to quote Dr. Charles E. Smith. "While it is agreed that, if not loaded too heavily, conventional water treatment is adequate to produce a water free from bacteria which cause typhoid fever or other enteric diseases, the picture with respect to some parasites and viruses is not equally clear. Among animal parasites we may mention E. histolytica, causing amoebic dysentary. Although amoebic cysts normally are removed by filters more efficiently than bacteria, under certain circumstances they have been known to pass through filters. Moreover, amoebic cysts are more difficult to destroy by chlorine, requiring doses as high as three parts per million."

Since Dr. Smith made this statement in 1956, it has become increasingly more clear that our conventional water treatment methods and practices do not under all conditions and

circumstances and with chlorine levels commonly used deactivate all known viruses capable of producing human disease. In the case of an overloaded treatment plant, which we shall most probably have for the next two summers and early falls here in the City of San Luis Obispo, it is not even a sure thing that such organisms as the one mentioned causing amoebic dysentary can be effectively eliminated from the drinking water supply.

Indications are that much higher chlorine concentrations than have been conventionally used may be consistently effective in deactivating those viruses, and if so and such dosage levels are employed, the consumer drinking water exposed to recreational use may be expected to have to pay the premium of drinking water stinking with chlorine.

Another type of microorganism which has been known for some time named the "pleuropneumonia-like" organism was only just, January of this year positively identified as a disease-causing agent in man. This organism has now been found to cause pneumonia in humans and may pose a greater problem even than viruses in water reservoirs

exposed to human use and in water treatment. While it is as small as viruses and therefore as elusive to filtration, it is capable like bacteria of not only living but of multiplying outside of the host cell. Whether it can survive or can multiply in the water of a reservoir or whether it is resistant or susceptible to current water treatment methods is only another one of the unknowns with which we are faced.

I do not believe that these treatment plants were designed to remove all of the petroleum end products called hydrocarbons and I will come to this again shortly.

E. Available tests of water purity:

The test in common use which requires a public health laboratory such as we have in health departments is called the coliform test, which sensitively detects the presence of coliform organisms which are present even in much greater quantities in human feces than are viruses. Unfortunately as a test of purity and safety of water after treatment with chlorination, it has very limited value because it is now known that the viruses are much more resistant to chlorine than are the coliform organisms, neither

does this test differentiate between human and animal coliforms.

Then, in truth, we actually have no practical test with which we can determine the safety of treated water which has been exposed to viral contamination.

Use of this test as an index, the coliform test, of detecting virus contamination of water entering the treatment process before chlorination obviously has some value on composite specimens, but continuous monitoring is impossible and even running analysis on specimens taken hourly is impracticable for existing public health laboratory facilities.

If it were possible to do the bacteriologic analysis on specimens taken once a minute from near the water intake of a reservoir, 3,400 gallons of water would pass the sampling site between one minute specimens at a treatment rate of five million gallons per day. This is the rate of maximum capacity for the treatment plant for the City of San Luis Obispo. This volume of water may be heavily contaminated and its coliform content completely unnoticed in the specimens taken for analysis.

If the specimen did pick up coliform organisms in quantity sufficient to be detected by standard analytical methods, the results would not be known for two days, and current practice is to take no extraordinary or emergency action on findings of contamination of the raw water.

Obviously then, enormous numbers of virulent (ability to infect) organisms could enter the treatment plant, and, if not eliminated by the treatment plant, they would be delivered to thousands of water consumers.

II.

A. I If then, from an analysis of the technical aspects of the problem, the recreational use domestic water supplies appears to be an unsafe practice contrary to the public interest, how was it justified, and the present state-level policy established. I shall return to this apparent enigma again but offer at this point an obvious reason: the fact that the great deal which is known about the behavior and the characteristics of disease-causing viruses simply was not known at the time that the practice became established.

Perhaps the situation which we now find ourselves in with various groups and responsible

officials trying to work within the framework of a policy out-of-joint with current knowledge would never have been permitted to develop if present knowledge had been known when the policy was initiated. The argument which is advanced at this time as the best available proof justifying this policy and for continuing the practice in question is that no epidemics have been known to occur in California communities where the water supply is a reservoir used for recreational purposes operating actually or allegedly as specified in Title 17 of the California Administrative Code.

Again an extension of the same argument states that within this state are communities whose water source suffers far more pollution and contamination than any reservoir authorized for recreational use under the terms of Title 17 could possibly receive, and that there have been no known epidemics in these communities. The word epidemics has been loosely used and should be defined: The dictionary says, "common to, or affecting at the same time many in a community," and, "an unarrested spread of something epidemic, as a disease." The common misconception is that an epidemic must be an explosive outbreak of a

fulminating disease such as cholora, smallpox or typhoid fever.

To be sure, there is no mistaking one of these kind of epidemics, but we have many other kinds prevalent in California which we don't like and which we would eliminate if we could, but we have more or less learned to live with them. Medical and safety authorities believe we have a continuous epidemic of accidents, that we have a chronic epidemic of emotional illness and more pertinent to present discussion, we commonly have every year many epidemics of respiratory and gastro-intestinal infections. These are not in all cases mild, and besides, discomfort and inconvenience often enough cause absence from work or from other normal pursuits. Hitting debilitated or otherwise ill persons, these conditions augment stress and may cause death.

These gastro-intestinal and respiratory infections are just the kind of conditions that can be caused by viruses escaping all safeguards in a water supply system subject to human contamination at the source and retaining virulence (ability to infect) right into the home, restaurant or hospital water tap. Furthermore, in truth, such

epidemics usually escape attention of public health authorities because they are expected and customary.

B. At this point leave us consider the basic state laws in the Health and Safety Code which ostensibly govern the quality of community water supplies.

Section 4021: "If the board (State Board of Public Health) determines that the water being furnished or supplied is such that under all the circumstances and conditions it is pure, wholesome and potable and does not endanger the lives or health of human beings, it shall grant a permit authorizing the petitioner to furnish or continue to furnish or supply the water."

Section 4022: "Any permit issued may be revoked or suspended by the board at any time if it determines that the water being supplied or furnished by the permittee is or may become impure, unwholesome or unpotable or endangers or will endanger the lives or health of human beings."

You will note that these laws do not require that the water be of such quality to cause

epidemics before a permit be refused or revoked, but that under all circumstances and conditions domestic water supplies must be pure, wholesome and free of danger to human health.

Even the less dramatic epidemics with which we are familiar are surely embraced within the phrase, "endanger health", and there are many other conditions not epidemic which cannot be other than covered by this term. For example, previously mentioned, many infectious diseases such as polio and infectious hepatitis or pneumonia are occurring sporadically but continuously in a population generally immune but with a substantial number of susceptible individuals. These sporadic cases could be caused by live viruses in the water supply.

This committee and the public should be informed that infant formula these days is commonly prepared with water taken directly out of the tap, mixed with milk and fed to the infant with no boiling at any time. Infants, it should be noted, are particularly susceptible to infections because substantial immunity has not yet had time to develop in them. This certainly is a measure of people's confidence in their municipal water

supplies.

Again I will quote Dr. Charles Smith from his address delivered on the Public Health Limitations on Recreational Use of Reservoirs in 1956. "Indeed, we must recognize the public's confidence that everything is always as it should be in water treatment may be unduly optimistic. Man may err and equipment may fail. Even though water treatment facilities are provided, safeguards, care and judgment must be exercised to insure that the capabilities of the installed facilities are not exceeded. We cannot accept the philosophy that it is unnecessary to concern ourselves with the quality of raw waters, that all we need to do is spend enough for water treatment facilities to produce a safe and acceptable water."

C. Many cancer research authorities now believe that much if not all cancer is caused by some kind of a virus and thought must be given to the possibility of cancer being caused by viruses transmitted in the water supply or of cancer and other abnormal biological effects being caused by long-term exposure to the minute traces of petroleum products in the water. Adverse

biological effects of long-term (many years) exposure to various environmental pollutants such as smog, cigarette smoke and radioactivity are now well-established. The cumulative effects of continuously absorbed minute doses of these pollutants cause, help cause or aggravate cancer, radiation disease, lung disease, heart disease and contribute to generally shortened life expectancy from more diffuse biological effects.

Hydrocarbons from cigarette smoke and petroleum end products are known to cause cancer. Similar or identical hydrocarbons are being introduced by boats on these reservoirs from their motors and from the highway asphalt washing off the boat bottoms and sides -- such material and other unclassified filth accumulating as the boats are trailed over the highways.

Continuous application of these substances to the water produces a composite drinking water representing vegetable, animal and mineral components which our treatment plants cannot be expected to extract and whose cumulative adverse affects on human health can only be suspected and feared at this time.

D. The truth is, the studies have not been done

which could determine whether these conditions of indisputably ill health have been caused or could be caused by human pollution and contamination of a domestic water supply reservoir. Such investigations would be difficult, expensive and would probably take years to perform, but if continuance of the policy which I have challenged here can possibly be entertained, surely such studies must be done.

This is the kind of proof which is wanting and which must be forthcoming, both to satisfy these laws determining water standards and to justify the policy of recreational use of domestic water supplies in terms of decency and humanity.

Nature surely never intended the substances mentioned to be a part of our daily diets, and if we are to make them a part, we can be expected to pay a price in terms of health and longevity. If it becomes clear in twenty to thirty years that cancer and other grave conditions are truly being activated or aggravated by this practice of subjecting our water supplies to this abuse, it will undoubtedly be too late to make amends to those who have been so afflicted.

III.

A. The hazards which I have demonstrated by linking the components of the chain of disease transmission may be said to be hypothetical, without material proof, and those unconvinced at this point may demand, "Very well, such unfortunate things may be possible, but will they happen or are they even likely to happen?"

As in all affairs, the axiom seems to be that, "The proof of the pudding is in the eating". This axiom applies to the question at hand and examples of the consequences of unwise exposure of domestic water supplies are abundant enough to produce a definite lack of trust in such drinking water, if not frank anxiety.

For example, recent epidemics of infectious hepatitis attributed to the treated municipal water supplies have occurred in Rhinebeck, New York; Clearfield, Pennsylvania, and other communities in the United States. To go farther afield, many such epidemics have been reported from all over the world, and do not deceive yourselves for a minute that other countries do not have water treatment plants similar or identical to ours. In Delhi, India, 1955-1956, there occurred 20,000 to 40,000 cases

of infectious hepatitis, with many deaths, attributed by investigators to a treated municipal water supply. This happened in a population which surely has a very high level of immunity to infectious diseases in comparison to the population of the United States.

A poliomyelitis outbreak in Edmonton, Canada, was caused by a treated domestic water supply.

B. In connection with these outbreaks cited (and many others not cited), competent authority can fairly state that these situations are not exactly comparable to circumstances under question here in California, that as best as can be substantiated, in all of these cases, the raw water was grossly polluted with sewage before treatment. I have no evidence with which to refute this contention and will accept their word for it, but it is basically germane to our problem only in a relative sense.

Who knows how many epidemics have either not been reported into the literature or how many less severe epidemics have occurred as a result of infection by viruses (or even bacteria) attenuated by the various forces applied in the water supply system on their trip from somebody's feces or

urine to the retail consumer? Furthermore, the contention is only relatively germane because there is no conclusive evidence indicating that even solitary individual incidents of contamination in the watter cannot get into the consumer's tap in virulent form. In other words, the danger is still there just as if all of a city's sewage was being dumped into the reservoir, but, of course, the magnitude of danger and the level of risk is greatly diminished.

In passing, it should be noted that we have documented one incident of relatively gross contamination right to the water's edge of our own little Salinas Reservoir. There is no question that this incident is essentially a result of this reservoir being open to recreational use.

C. It has been stated locally that because there have been on "epidemics" in the City of San Luis Obispo, there is no valid reason on a health basis for closing the area to public use. To demonstrate the callousness of this kind of "reasoning", let me present a couple of analogies:

1. If a fifteen month old infant is permitted to walk across a busy highway unattended, he

may succeed in getting across perhaps at most a hundred times before he is struck down, mangled and probably killed. Does the fact that the infant may make it across many times unharmed justify whatever satisfaction someone may obtain from promoting the activity?

2. You may take a revolver with a cylinder of five hundred or one thousand chambers and place one live cartridge in a chamber, then twirl the cylinder and place the muzzle to your temple and pull the trigger just once a day. Chances are if you were lucky, you could get away with this "game" for many years before you inevitably got the deserved bullet in the brain.

It would seem that we are playing Russian Roulette with recreation on our water supplies comparable to the odds of one live cartridge in a thousand-barrelled cylinder, where Delhi, India, was playing the same game with the odds of one cartridge in perhaps a ten-chambered cylinder.

The proponents of the established practice appear to base their position on the argument that we don't have "proof" that this practice is harmful

to the health of the water consumers. In the light of all I have heretofore presented, I don't see how it could reasonably be contended that there is no danger and apparently the kind of proof that is asked by said proponents is the kind we would present with a dead infant, a bullet in the brain or an epidemic with hundred or thousands of persons sick - perhaps many dead. With knowledge of the evidence and its implications presented here, to maintain this attitude and actively promote the activity under question, I submit is most irresponsible. Such a philosophy is manifestly divergent from traditional American concepts of decency and fair play.

In keeping with these traditional and American concepts, if the slightest doubt existed as to the safety or harmlessness of an activity in a situation of this nature (and in this particular situation more than a slight doubt exists) wherein the health possibly in danger is of persons other than that of the executors of the activity, the burden of proof that no danger exists rests squarely on the promoters of the activity in question. Nothing remotely resembling the proof needed has been forthcoming from said

proponents, and, indeed, they have managed by some strange twist of logic and tradition to evade this responsibility and have demanded proof of the unthinkable kind just indicated as showing the activity harmful.

I would challenge these proponents and promoters to properly accept the responsibility inherent in their position and to undertake to prove beyond a shadow of a doubt that the activity they promote, recreational use of domestic water supply reservoirs, is absolutely harmless and free of risk to health of the consumers of the water.

IV.

A. I would like now to turn to a review of the basic laws involved and to some administrative and legislative considerations.

Section 4021: "If the board determines that the water being furnished or supplied is such that under all the circumstances and conditions is pure, wholesome and potable and does not endanger the lives or health of human beings, it shall grant a permit authorizing the petitioner to furnish or continue to furnish or supply the water."

Section 4022: "Any permit issued may be revoked or suspended by the board at any time if it determines that the water being supplied or furnished by the permittee is or may become impure, unwholesome or unpotable or endangers or will endanger the lives or health of human beings."

These laws appear unequivocally to require that community water supplies be pure and safe at all times. They are phrased in absolute terms and there is no allowance here for "relatively safe water" or "water pure most of the time".

The state law and the Health and Safety Code which apparently is the basic law permitting recreational use of domestic water supply reservoirs is as follows:

Section 4050: "It is hereby declared to be the policy of this state that multiple use should be made of all public water within the state, to the extent that such multiple use is consistent with public health and public safety. 'Multiple use' as used in this section includes domestic, industrial, agricultural and recreational uses. As used in this chapter, 'recreational uses' shall

not, with respect to a reservoir in which water is stored for domestic use, include recreation in which there is bodily contact with the water by any participant."

Examining this law and comparing its sense to that of Section 4021 and Section 4022, in view of the conclusions drawn from evidence as I have presented it, there appears to be a fundamental incompatibility. Also within Section 4050 there appears to be a contradiction in terms. To wit, the law states that recreational use should be made of the water but also requires that such recreational use be "consistent with public health and safety". This, I believe, is impossible. In effect, this law is sanctioning and promoting (the phrase, "should be made") an unjustifiable policy and an unsafe practice.

However, policy and practice based on an unsound principle are not sanctified by virtue of source in the law, nor are all of the results of this circumstance necessarily rendered magically beneficial to society by said policy because it was formulated at high levels of government.

B. As I understand our government, the State Board of Public Health and the State Department of

Public Health have the responsibility of implementing state laws in the field of public health, and they develop, promulgate and administer (the latter in partnership with local health departments) regulations arising from the basic laws passed by the state legislature. I can understand the State Board of Public Health following through on the laws just reviewed and sanctioning the practice in question only if the board conceived the legislative action as a mandate to the effect that recreational use of domestic water supply reservoirs must be justified and implemented.

In this light, the State Department of Public Health is thrust into the role of having to attempt to reconcile and justify the aesthetic detriments and the health risk consequences of this policy with the responsibility of assuring absolutely safe community water supplies. Here it must be mentioned again that much new knowledge acquired could not have been taken into consideration in establishing a policy seven years ago because the acquisition of such knowledge post-dated establishment of the policy.

It is not necessary to read between the lines

of Dr. Charles Smith's statement previously quoted to get the strong impression that he had serious reservations about initiating this policy, notwithstanding the beneficial recreational considerations. Remember, please, that Dr. Smith was and is at the head of the State Board of Public Health.

I believe that this board and the State Department of Public Health will agree that the public health considerations of a safe water supply supersede public health considerations of the health benefits of recreational use of these water supplies. This is so stated in State Board of Public Health policy.

Inasmuch as I am convinced that the two uses of water are incompatible (aesthetically as well as disease-wise), I cannot but conclude that the State Department of Public Health has been forced into an impossible situation. I do wish, however, to take pains to commend the personnel of the State Department of Public Health for making the best of a bad thing and doing a remarkably good job while constrained to operate within the confines of an unwise policy not of their making. We can be very sure that it has not

been easy.

C. As I understand the purpose of this meeting here today, sir, you are representing the health and safety of the people of this state for the senate as a member of the committee assigned to these problems. May I please take the liberty of quoting the dictionary for correct meaning of the two cardinal words in the title of this committee, "Health" and "safety". Health: "freedom from physical disease or pain". Safety: "freedom from danger or hazard".

Surely it cannot now be reasonably contended that recreational use of domestic water supply reservoirs does not constitute some degree of "danger or hazard" to health of the water consumer, although exactly what degree is admittedly uncertain.

In closing, sir, I make a special appeal to you and to this committee to take a searching look into the evidence and circumstances of this problem, to realize fully the implications detrimental to human health and then to endeavor correcting what I believe to be past legislative error with its attendant unwise policy. This clearly appears to be the action indicated to

serve the general public interest.

SENATOR STURGEON: Thank you, Doctor.

Do I have questions from the committee? Senator Thompson, do you have any?

SENATOR THOMPSON: Well, I believe, Doctor, your statement could have quite a bit of study before we start to question it. Just a few things: For instance, you mentioned baby formula.

DR. HARPER: Yes, sir.

SENATOR THOMPSON: In that the water should be used as it is taken from the faucet or the tap, is that right?

DR. HARPER: This is customary nowadays.

SENATOR THOMPSON: Well, the thought appeals to me, shouldn't that be water such as water that you would purchase, you know?

DR. HARPER: Well, I would say perhaps it should be.

SENATOR THOMPSON: Rather than use any water? I mean, I don't care whether it is from an area where everything is prohibited or not. I would think that a baby's formula should come from a better source of water than out of the faucet, but I realize you are probably right.

DR. HARPER: Well, this is perhaps a good

suggestion, Senator. Maybe we shouldn't have this confidence in our municipal water supplies, as Dr. Smith has suggested.

SENATOR THOMPSON: Another thing: I believe as I gather it, your area here, you study probably fifteen hundred acre-feet of water a year. Now, the Margarita Lake, and I am using that -- I mean, we are thinking of the whole state. However, I believe this lake is the foremost in everyone's mind, that it is fed by streams into the lake, isn't that right?

DR. HARPER: Yes.

SENATOR THOMPSON: What protection is there in the streams above the lake? Now, might this water, which is running in the lake, now, fishing, swimming, everything could take place a very short distance from the lake itself, couldn't it?

DR. HARPER: Well, I --

SENATOR THOMPSON: And that would be a situation that could happen in many parts?

DR. HARPER: I think this is true. Although the great runoff, of course, is within a period of a few months, and these generally, these feeding tributaries, are small and not really large enough for swimming, but it is certainly true they cover the water-shed and they can be contaminated.

SENATOR THOMPSON: I am thinking of the whole thing. This is not a new subject, as you know. We have had this in the legislature for many years. I think of these streams feeding in there, and I had been fishing when I was a kid. You take a drink out of the stream and you go up a few hundred yards and you find a dead cow in there. We put the water in these reservoirs and we think of the filtering system that will take everything out.

I remember, I think it was East Bay Mud testified up there in Sacramento at one time, I think they have open fishing and so on, at the time that bill was before us, and I believe, as I recollect, I voted against it then, but I did wonder. They finally admitted that their filtering system could just take about everything out of the water.

I am wondering if your statement, you are not sure that they are entirely efficient, is that correct?

DR. HARPER: Well, they certainly have serious doubt that the standard water treatment methods can remove all organisms that can cause human disease.

SENATOR THOMPSON: Well, I have been very much interested in your statement.

DR. HARPER: :In fact, the recommendation I made here to the governing bodies, would you be interested in that? That bears on this. It is very brief, about three

sentences.

SENATOR THOMPSON: Mr. Chairman?

SENATOR STURGEON: That is all right.

DR. HARPER: In the specific case of Salinas Reservoir, my recommendation to the Board of Supervisors and to the San Luis Obispo City Council is to discontinue all public use of the lake and its water-shed and thereafter to provide controls preventing illegal entry into the area. This recommendation holds for any and all surface water resources which would be used for the domestic water supply of any community within this county, and holds until standard water treatment practices have advanced to the point that they can be certified by qualified authority to eliminate or deactivate at all times all agents causing human disease and transmissible human-to-human by water medium, and under all conditions of the water in any particular situation.

This is my interpretation. It comes from, you might say, unimpeachable sources; the Taft Institute of the United States Public Health Service in Cincinnati which is, really in this country, is the leader in this kind of research. Regarding some of their reports, there is serious doubt. This business of elective chlorine levels and so on -- even given optimal performance at all times of a water treatment plant, I believe there is still

a question.

SENATOR THOMPSON: Thank you very much, Doctor.

SENATOR STURGEON: Senator Quick?

I should take time to introduce the new member of the staff that came in after the introductions were made. This is Mrs. Porter. She is my Administrative Assistant. I think it is interesting to some of you people to know that she has served this county, and that is this county now, for eighteen years, and I think this is her first time down here on a committee. But this is the girl who does the work in Sacramento, keeps the store when I am home. Mrs. Porter.

Thank you very much, Doctor.

Our next witness will be Mr. Stead here from the Department of Public Health, or is somebody else going to appear for the state department?

MR. REINKE: Mr. Stead has not arrived. Would you like me to testify, Ed Reinke?

SENATOR STURGEON: Would you like to, or would you like to --

MR. REINKE: I think it might be better to wait until he gets here. I think his plane may be late.

SENATOR STURGEON: All right.

How bad is this going to inconvenience the folks from Los Angeles because they wanted to -- do you

want to wait for him or go ahead and testify?

MR. SKINNER: Whatever you think, Senator. I would be pleased to testify now.

SENATOR STURGEON: If you would like to now. It was indicated you would like to come after the Department of Public Health.

MR. SKINNER: We can go ahead now, sir.

SENATOR STURGEON: Okay, fine. These folks have to get back to Los Angeles.

Will you identify yourself?

MR. SKINNER: Thank you, Senator. I am Robert A. Skinner, General Manager and Chief Engineer of the Metropolitan Water District of Southern California. On behalf of the Board of Directors of The Metropolitan Water District of Southern California, I wish to express appreciation for this opportunity to state the MWD's position regarding recreational uses of domestic reservoirs. It is widely known, at least in Southern California, that the district has always, by a nearly unanimous vote of its directors, opposed any such uses of what we term terminal or secondary reservoirs. The opportunities to state fully our reasons for this stand have not been too frequent recently, however, and thus we are grateful to the Subcommittee on Recreational Uses of Domestic Water Supplies for inviting us to appear here

today.

To begin with, the district recognizes the ever-growing need for more recreational facilities in California. This was accurately described by the California Public Outdoor Recreation Plan Committee in its report two years ago to Governor Brown and the state legislature. To quote briefly from that report:

> "Almost every person in California is well aware that the number of people in the state is increasing daily. Many new citizens are being born; many are pouring in from other states and countries; many other, older citizens -- longtime residents, perhaps -- are in a sense, added to the population because they are living longer, healthier lives. Half again as many people are here today as were here in 1950. Each new person needs -- perhaps demands -- recreation. But beyond this, more Americans are enjoying the out-of-doors. They have far more time for recreation than in pre-war years; they have more money to spend; they can and will travel farther with greater ease and speed. All of these add up to problems in the

field of recreation that have become of major concern to government and leaders across the nation."

No one can dispute the truth of that statement. In addition, the district accepts the fact that some recreational uses can be permitted with safety at some man-made lakes that are part of domestic or urban water supply systems. I have in mind here particularly Lake Havasu on the Colorado River from which the MWD diverts water and Crowley Lake, a reservoir created by a dam built by the City of Los Angeles in the High Sierra. Both, as you know, lie hundreds of miles from the ultimate users of the water for domestic purposes.

At this point, it seems advisable that I describe the kind of reservoirs which the Metropolitan Water District has unswervingly opposed opening for any recreational uses. At the outset of my remarks, I referred to them as terminal or secondary reservoirs. The chief example of such a reservoir on the district's aqueduct system is Lake Mathews in Riverside County near the City of Riverside. A completely man-made lake, it currently has a surface area of about 3,000 acres and holds approximately 60 billion gallons of water. Although smaller, Santa Margarita Lake near here falls into the same category, as I understand it.

From reservoirs of this type, some or all of the water goes to homes and other places of domestic use without the benefit of further storage in reservoirs. From Margarita, all of it, I am told, passes first through a treatment plant. From Mathews, approximately fifty percent goes through the district's softening and filtration plant at La Verne, and another filtration plant which ultimately will handle forty percent more is under construction near Yorba Linda in Orange County. Even when this additional filtration plant is completed to its full capacity, there will still be some of the water from Lake Mathews serving domestic needs in areas upstream from the two filtration plants which will not have undergone treatment prior to delivery to the district's constituent agencies.

This would be a matter of serious concern if Mathews were opened to any recreational uses. Nevertheless, the fundamental thing is that we oppose such uses even where all the water is subjected to filtration before it reaches the kitchen taps and drinking fountains.

I must emphasize here that we do not object merely on the basis of cost although there is no question that use of our Mathews Reservoir for recreational purposes would force the water users in the district's service areas to spend many millions of dollars in

additional treatment at existing plants and in constructing more such plants. This could prove an intolerable additional burden for the taxpayers and water users residing within the district's boundaries.

Our basic objection goes far beyond this element of tremendous additional expense that the citizens in the district would have to bear.

To put it in very plain terms -- we cannot see any sense at all in permitting the contaminating of a pure supply of drinking water and then trying to re-purify it.

This is the heart of our position and I want to expand on this for a moment.

First, we have been fortunate in Southern California in that the one billion gallons of water we are drawing each day from the Colorado River is water of remarkably good quality. I am not referring to its mineral content, which is comparatively high, but to its comparative freedom from bacteriological and other organic pollution, in which respect it is superior to the water from other major rivers in the United States, with one or two possible exceptions.

Let me interject here that the water which will be supplied from the state water project, while it is often referred to as Feather River water, will, as you are

aware, actually be taken from the Sacramento-San Joaquin Delta. It will be of much lower quality than the Colorado River water with regard to bacterial and other organic pollution. For this reason, the state is expected to allow recreational uses of the reservoirs for this system. All of this state project water used for domestic purposes, would, of course, require treatment by coagulation, filtration and disinfection in any event.

However, to permit fishing, boating and other recreation at our Mathews Reservoir would result in injecting contaminants in water which now is extremely high in sanitary quality.

The point to keep in mind here is that the treatment of water to remove all pathogenic organisms, despite the technological advances occurring in this century, is still difficult as well as expensive. There is no fool-proof, one hundred percent effective way to be sure that any and all water-borne disease organisms, particularly viruses, can be and have been eliminated. Thus, if the Mathews Reservoir were opened to fishing, the wholesomeness of the drinking water that Southern California obtains from the Colorado River would be endangered and a serious public health problem could arise.

The engineers, chemists, bacteriologists and

other technicians who plan, build and operate water supply works, in a formal statement of policy adopted by the American Water Works Association, oppose any moves to take control of water supply reservoirs away from the water purveyors.

This is certainly the position the Metropolitan Water District holds. The state legislature gave the district the great responsibility to develop, transport and distribute a supplemental supply of water for the Southern California coastal plain. In meeting the responsibility, the district has spent over the past thirty years the equivalent of more than one billion dollars at present-day costs. The Colorado River Aqueduct transports that water more than 240 miles across deserts and mountain ranges to Lake Mathews, the terminal reservoir for the system.

We feel that the district should not be deprived of a critical element of the authority it must have to continue supplying safe and wholesome water to the expanding area that as grown in population from 1,600,000 persons when the district was formed in the late '20s to more than 8,000,000 now or roughly half that of the entire state. It must not be forgotten that what we are concerned with here is potable water for people - pure water for people to live on - clean water which is as

necessary to life as the air we breathe.

I might add one comment here in regard to the attitude that we find in areas contiguous to Lake Mathews, and that is that knowing that the water has been used for body contact uses in Lake Mead and Lake Havasu in the Colorado River, these people say to us, "Well, why do you -- why do you concern yourselves then with Lake Mathews? The water has already been exposed to the same things that you are denying the people to use in Lake Mathews."

Well, our answer to that is that the final bulwark of a retention in a reservoir, which does not have additional contaminants added, is a very vital aspect in the water supply problem. If we could have one hundred days of retention free from additional contamination, that would very largely mitigate or even eliminate the contamination that may have been already introduced at more remote points.

Now, at Lake Mathews, we do not have the one hundred days. We have nearer to about sixty days retention, but even this is a very valuable adjunct to the process of preserving the quality of the water in its delivery to the people. And if we were forced to open Lake Mathews for recreational uses, it then would be necessary to augment the treatment processes at both the

LaVerne Plant and the Yorba Linda Plant at a cost for coagulation and other additional treatments which we are not now using on account of the original purity of the water to the extent that the additional cost to the people of Southern California would be no less than an additional one dollar for every acre-foot, and that would be one million dollars a year. Capitalize that and you get a capital expense of about twenty-five million dollars, so that this is a very significant aspect in respect to the cost of water to the people. Thank you.

SENATOR STURGEON: Questions? Senator Thompson.

SENATOR THOMPSON: I was going to ask you on the thing, matters that you touched on in conclusion, where Lake Mead is wide open for any purpose they want it, then it has been -- the water that leaves Lake Mead would not be pure, but if you put it in this lake for one hundred days, then automatically, itself, it would clear up?

MR. SKINNER: Well, perhaps I shouldn't put this into absolute terms, Senator, but the evidence seems to be that if you can store water in an open reservoir for, say, one hundred days and without additional contamination, the effects of prior contamination will have been largely ameliorated. They will have been

substantially reduced.

Now, this is entirely a relative matter. As Dr. Harper says, maybe one individual might, conceivably, contaminate water so that some individual would be infected further down the line. But it is a relative matter, and you can readily see that if you introduce contaminants, say, just upstream from your taps, say in your pipeline one hundred feet upstream from your tap, you wouldn't have any question but there would be totally immersable contamination. Now, as you go more remote from the tap, the danger gradually diminishes. As you get very remote and also have the benefit of additional dilution -- for instance, at Lake Mead, the dilution is possibly thousands of times what we would have in the more close-in reservoirs, so that in addition to the benefits of dilution, you have the benefit of the storage, the interval of storage, which reduces the -- which permits the organisms to die before they reach the consumer. So it is a relative question.

And that is our position that we wish to protect the final bulwark in our system from additional contamination.

SENATOR THOMPSON: Are tests made of the water as it leaves Lake Mead or before it gets to your own reservoir?

MR. SKINNER: They are made by many agencies, Senator, I believe. Our agency makes test of water from all the way along the system beginning at Havasu. We have seldom gone as far as Lake Mead, but we do go up there for radiological testing. We test the whole watershed for radiological contamination.

SENATOR THOMPSON: How do you find the water as it comes out of Lake Mead?

MR. SKINNER: The water, as it comes out of Lake Mead, actually is quite good quality sanitarily. The dilution is very great there and the -- if you would go just below Needles, you would be a little worse off because at Needles, there is sewage introduced which, I believe, is now reaching the point where they will have treatment. But up to recently, the sewage at Needles was not treated. However, even there, the dilution was great.

SENATOR THOMPSON: They do dump sewage water directly in?

MR. SKINNER: They did in the past. I believe that is corrected, being corrected. The City of Needles did.

SENATOR THOMPSON: Aren't there cities of Europe where they re-use sewage water?

MR. SKINNER: After treatment?

SENATOR THOMPSON: Yes.

MR. SKINNER: Yes, sir, we did in this country, too. For instance, the Ohio or the Missouri, in certain places, might be highly contaminated in its river state, but, of course, now bearing in mind that the treatment processes in those cases are not as rapid as the treatment in a rapid sand filtration plant where you treat the more highly polluted waters, you might have a back up of, say, a slow sand filter followed by other coagulation clarification and more filtration. In other words, you adapt the treatment to the degree of original or previous pollution, so that in order to safeguard water, you have to add expense if you have more pollution.

SENATOR THOMPSON: Well, then, tell me this, and I mean, certainly, this is a fact-finding committee, and we are going to ask a lot of questions because we want to know. But for many years, the cities along the banks of the Sacramento River did pour their sewage into the river, and the cities down below used it for drinking water.

MR. SKINNER: Didn't they use it largely out of wells rather than directly out of the river?

SENATOR THOMPSON: I am not sure. Maybe someone else could answer that question a little later on. But, evidently, these cities cleaned it up. I am wondering if there was any epidemic from the use of that

water that had the raw sewage running in there.

MR. SKINNER: We do not contest the possibility and the technological ability to purify water from practically any source or any degree of prior contamination. There are the elements of risk, the elements of failure of human fallibility, and the cost, very much the cost. And also, as Dr. Harper pointed out, we are finding, as time goes on, that there are more organisms which were not known about and which do cause disease; for instance, protozoa and viruses which were largely disregarded in prior testing of the sanitary quality of water are now being given greater recognition.

It is found, for instance, that certain viruses which can be encased in cysts will pass through a treatment plant and pass through chlorination and still not be eliminated or killed. There are hazards which we must recognize, I believe, and bearing in mind again that this is all a relative question and that the recreational uses which are more remote from the final use of the water are the ones which are the more permissible. As you get closer to the tap, then the question of the recreational use becomes much more critical.

SENATOR THOMPSON: I believe, Doctor, this question is going to become very, very important all over the State of California. I can think of our Santa Clara

Valley, our City of San Jose, and San Jose has a water works, a private concern. They built a fence around the reservoirs and they have got it made. Nobody can go in there. But as this thing grows where we have the county reservoirs, the Anderson Reservoir, undoubtedly the future of those will be used for domestic water supply, and that situation is happening all over the State of California. Recreation is becoming very, very important with the increase in population and is something that we must give a great deal of study to, possibly with the idea of improving these filtering systems so that they will take care of this situation if they don't already.

MR. SKINNER: That is a very good point. I would reiterate again that the, you might say, the heart of our position would be that we would like to have a final bulwark after the recreational uses which are permitted, if we could have a place to store the water for a reasonable interval of time wherein there would not be additional contamination entered into the water, that this would very considerably improve our ability to be sure that we do deliver a potable and safe water to the -- to the final distribution system.

SENATOR THOMPSON: Thank you, sir.

SENATOR QUICK: Question.

SENATOR STURGEON: Senator Quick.

SENATOR QUICK: Mr. Skinner, how long would this water have to be stored in order, as you say, to purify itself to be reasonably safe in having it come on down the stream?

MR. SKINNER: Senator, I am not -- I don't pose as an authority on water purification. From what I understand and have read, I would say that if water can be stored one hundred days without additional contamination in an open reservoir, that there would be a very considerable safeguard even to the point of assuring that there would then not be much likelihood that pathogenic organisms would remain in the water that flowed out of the reservoir after that much storage. Now, it may be less than one hundred days. This is all still relative, and the question of the life of these organisms I don't believe is absolutely determinable. But it is generally considered that one hundred days would be quite a safe storage period.

SENATOR QUICK: Well, now, most of these water supplies, as I am sure you are well aware, are subjected to use by different animals which frequent our different areas throughout the country. What is the difference in human contamination or livestock or wild animals which roam our country?

MR. SKINNER: Senator, the difference is very

significant, and the difference is this, that although the animals do produce the coliform and these bacteria show up in the tests, in the standard tests, the same as coliform bacteria that might be released by human beings, nevertheless, the incidence of disease, that is, the pathogenic organisms, are released from human beings, not from animals, even from the birds, which may be the most critical aspect of animal contamination in the close-in reservoirs.

The medical profession could give you a much better answer to that, of course, but from what I have read of the subject, the critical difference is that the organisms that may be introduced from human beings can cause disease and that the organisms which would be introduced from animals do not cause the diseases.

SENATOR QUICK: Thank you.

SENATOR STURGEON: Staff?

One question I have before you leave, Mr. Skinner. That is, do you anticipate any problems in cleaning up this delta water when that is delivered to Los Angeles County?

MR. SKINNER: We anticipate problems, yes, Senator. The thing is that the treatment, the cost of the treatment, we think, would be greater than the cost of treating the water that we now pass through Lake Mathews.

In other words, we would have to use continuous application of coagulants in connection with the treatment. But also bear in mind that the water delivered to MWD from the state system will still have terminal storage at Castaic Lake, Cedar Springs Reservoir and Patrick Reservoir which are relatively placed within about seventy miles at the most of the metropolitan center of Los Angeles. Now, if the state would eliminate the recreational uses in those terminal reservoirs, then we might have still some of this storage that -- that would reduce the incidence of contamination. We recognize, of course, that Oroville, San Louis would be used completely for recreational uses. I don't think we know yet what will be the situation on the terminal reservoirs, but if the terminal reservoirs are opened to unlimited recreational use, then we do anticipate a much more severe problem in respect to water treatment than we have now.

SENATOR STURGEON: You do feel that you could clean it up though even if unrestricted use was allowed?

MR. SKINNER: Well, of course, there again, it is the matter of hazard. We know that we can apply the processes which, when nothing goes wrong, will do this. It is still a question of the relative hazard, and I would say that if the terminal reservoirs in the state system are used for unlimited recreational use that then there

would be additional hazards in respect to the domestic use of the water, more hazard than we have now. Also bearing in mind that it may be that we will have storage reservoirs under our own control, that is, secondary reservoirs, from which we may get some additional retention before this water is finally introduced into the distribution systems.

SENATOR STURGEON: One more question that has been with me ever since I was a small boy, and you are the first fellow that I ran across that I can get an answer: As you are entering San Fernando from the north, there is some water that runs over from the hill. I take it this comes from Owens Valley. Is this the purpose for that open water there, or is it just accidental?

MR. SKINNER: This is the famous cascade, Senator, and Ray Derby is here from the department, if he should testify. My understanding is that it was not for purposes of aeration, but if I am wrong, he can correct me.

SENATOR STURGEON: Just a way of getting it down the hill. Senator Quick.

SENATOR QUICK: Mr. Skinner, I am quite interested and concerned about your statement that the water from the Colorado River is better water than what you get from up north. Would you explain what is the difference in that?

SENATOR STURGEON: The Senator lives on the Colorado River.

MR. SKINNER: Senator, when using the word better, we are referring to the sanitary aspects. The water from the state system will be preferable in respect to mineral content. It is expected to have possibly less, at least in the earlier years, less than two hundred parts per million of totally dissolved solids as against something around seven hundred parts per million in the Colorado River, and ultimately it is expected to be below four hundred. That is, the state water is expected to be below four hundred parts per million.

Now, in respect to the possible incidence of such things as bacteria, protozoa and viruses, however, we would still say that the water from the Colorado River is far superior to water that could be diverted from the delta.

SENATOR THOMPSON: Mr. Chairman, can I ask one more question on that?

SENATOR STURGEON: Senator Thompson.

SENATOR THOMPSON: Is that because the water has -- is taken from the delta? Now, under the state water plan, ultimately will not water be taken from a source, from a supply closer to the source of the water rather than from the delta?

MR. SKINNER: I think not, Senator. The water -- The delta is the pool. The supplemental or subsequent facilities that would augment the supply of the delta will transport water to the delta from relatively uncontaminated sources. But this water will then pass through the delta before it is lifted by pumps into the California Aqueduct so that water that is transported by the California Aqueduct unavoidably will be, we would say, contaminated water.

SENATOR THOMPSON: Well, ultimately I had thought there would be another facility to bring the water down to those pumps from that area.

MR. SKINNER: But, nevertheless, introduced into the delta as an intermediary or as an intermediate situation before it is taken into the aqueduct.

SENATOR THOMPSON: Well, for instance, we are interested in the South Bay Aqueduct in our area. And, certainly, the water is going to come from the delta.

MR. SKINNER: That is right.

SENATOR THOMPSON: Probably the quality of the water will not be nearly as good as it would be from Lake Mead, but I believe it is the general impression, I sat on that water committee, that the water would be brought down ultimately by pipeline and ditch and at least a part of it put directly from the source into the pipelines to

your area and into the South Bay Aqueduct. I believe Mr. Berry or someone could answer that that is here.

MR. SKINNER: I think so, Senator. The State Department of Water Resources would be the authority there. We have not seen plans for diversion other than from the delta.

SENATOR STURGEON: Thank you very much, Mr. Skinner.

MR. SKINNER: Thank you, Senator.

SENATOR STURGEON: Mayor Davidson, would you like to appear at this time, or would you like to wait for the Department of Public Health?

MAYOR DAVIDSON: If the Department of Public Health is in a hurry, I would be glad to wait.

SENATOR STURGEON: They didn't say they were. I will leave it up to you.

MR. STEAD: I am Frank Stead. With me is Mr. Edward Reinke, Chief of the Bureau of Sanitary Engineers.

First of all, I would like to bring to you, Dr. Merrill regrets not being able to be here personally. He left Saturday for Geneva, Switzerland, as a delegate of the United States, member of the United States delegation to the World Health Organization.

We are going to divide our presentation into two parts hoping that this will be more helpful to the

committee. We believe the subject falls, naturally, into two parts. I would like to discuss the policy and legislative aspects of the broad question of the recreational use of a water impoundment, and then I would like to ask Mr. Reinke to review for you the technical aspects of the effect of recreation on water quality as brought to light in the recent study which we have conducted for the legislature.

The State Department of Public Health shares with local health departments in California the statutory responsibility to regulate the activities of public domestic water purveyors so as to insure that all water served to the public will be pure, wholesome and potable. This responsibility is set forth in detail in Chapter 7, Part 1, Division 5, of the Health and Safety Code (the California Pure Water Law).

In the same code in Section 101 the broad mission of the State Department of Public Health is set forth in the following terms:

> ". . . the prevention of disease, the prolongation of life and the promotion of the physical health and mental efficiency of the people of the state".

It would seem clear from this wording that the legislature intended the State Department of Public Health

to concern itself with preserving those environmental factors which prolong life and promote physical health, and certainly this would include opportunities for outdoor recreation on or near water. The department accepts this broad responsibility in addition to the specific responsibility to protect the quality of domestic water.

Twenty-five years ago in California, one might have reasonably concluded that the natural waters of the state, fresh and salt, together with the multiple purpose reservoirs, were ample to serve the needs for water-based recreation and that there was no need to contemplate the use of domestic water reservoirs for this purpose. The developments of recent years, however, have made it clear to all who have studied the problem that the demand for water-based recreation will soon greatly exceed all of the available water settings including the larger lake-like domestic water reservoirs.

The legislature has recognized this situation and in 1957 enunciated basic policy in Section 4050 of the Health and Safety Code in the following terms:

> "It is hereby declared to be the policy of this State that multiple use should be made of all public water within the state, to the extent that such multiple use is consistent with public health and public

safety. Multiple use as used in this section includes domestic, industrial, agricultural and recreational uses."

The nature of the basic issue is therefore clear. It is equally clear that this is no longer a question to be approached on the basis of individual philosophy, but rather one to be dealt with in terms of the firmly stated basic state policy just referred to. The problem resolves itself, therefore, into a determination of the limitations which considerations of "public health and public safety" place on the general principle of recreational use of all publicly-owned water reservoirs.

The State Department of Public Health has defined these limitations with respect to water supply reservoirs owned or controlled by a domestic water purveyor, in regulations adopted under the provisions of the Pure Water Law referred to earlier. These regulations, adopted in 1956, have been used successfully on approximately twenty-five domestic water reservoirs.

The remaining area of uncertainty pertains to multiple purpose reservoirs which are not under the control of a purveyor of domestic water and to which, therefore, the existing regulations do not apply, do not have legal application although we are all aware that the

principles embodied are pertinent. The solution would seem to lie in the enactment of regulations for this type of reservoir. Uncertainty exists, however, as to whether the State Department of Public Health has the exclusive, or even the primary, jurisdiction in this field. On the one hand, Section 4051 of the Health and Safety Code provides that,

> "All water supply reservoirs of a public agency whether heretofore or hereafter constructed, shall be open for recreational use by the people of this state, subject to the regulations of the State Department of Public Health".

On the other hand, most of the new artificial impoundments in the State Water Plan will be constructed by the Department of Water Resources, and many of the existing large multiple purpose reservoirs are owned by the U.S. Bureau of Reclamation or the U.S. Army Corps of Engineers. Furthermore, no specific statute, such as the Pure Water Law, setting forth procedures for administration, exists under the provisions of which the State Department of Public Health could adopt and enforce regulations for multipurpose reservoirs as it did for domestic water reservoirs.

For these reasons, it is the belief of the

State Department of Public Health that a clarification of this question should be made by the legislature in the form of a new statute which would clearly define and place the responsibility for developing and administering regulations governing recreational use of multiple purpose reservoirs in California. If given this responsibility, the State Department of Public Health would proceed diligently to carry it out, working in close cooperation with the other interested state agencies.

I would like to enlarge just a bit, if I might, Mr. Chairman, on what we have in mind in making this recommendation.

For a number of years, we operated under a swimming pool act which said the State Department of Public Health may adopt regulations to carry out the purpose of the act. The act itself, however, was so extremely general, covering, as it did, only the statement that the department has supervision over sanitation and safety and in public bathing places, that when a local health department, under the provisions of the statute, attempted to enforce these regulations, the Court would not accept the case, stating that, first of all, there was no standard in the statute to guide the department to set the regulations, and, finally, there was no penalty provision. Consequently, the regulations per se were not

enforceable.

Now, we anticipate that if we were to adopt, under the section of law that I have referred to, 4051, regulations for multiple purpose reservoirs where the reservoir is owned by the State of California or by the federal government where the recreational activity perhaps carried on by a county department of parks or recreation or by a private concessionaire, and someone, and there were violations of these rules and regulations, there would be a hiatus and an impossibility of enforcement. There would be no penalty in the law. There would be no clearly set procedures for enforcement.

In our opinion, what is called for on multiple purpose reservoirs is a sequence of decisions which are binding.

First of all, the owner of the reservoir make some kind of arrangement as to who is to carry on the recreational activities.

Then a recreational plan is developed under regulations which will adequately protect health and safety interest. Then in the light of that scheme and that plan and those restrictions, the State Health Department feels with the water purveyor that may be taking water from the reservoir and adapts his degree and style of treatment to meet that set of conditions.

Now, let us suppose that the recreational venture is swamped by a deluge or people, sanitary standards break down, it does not seem equitable or orderly for the department then to go to the water purveyor and attach the penalty of emergency measures and perhaps even warning of the public against drinking the water. The remedy should be applied against the owner, namely, the operator of the recreational venture.

We also believe that when it comes to a test between the public health responsibilities of protecting domestic water, promoting recreation, if one cannot have both, then the former should prevail. So that we believe that if we are to adopt regulations, we must clarify this question of jurisdiction, and there must be enforceability of regulations. In our opinion, regulations which are violated should be enforceable by any means necessary, including temporary closure of the recreational activity. Only by such a system could it seem to me the various parties proceed with any degree of security, particularly the enforcing agent, whoever it might be, have any opportunity to do a straightforward job.

We, therefore, think that a statute is needed for multiple purpose reservoirs which contains what the attorneys call a standard other than just the broad

objective of health and safety, some indication to guide the policy decision and then particularly enforcement provisions which are clearly spelled out and which can indeed be carried out so it is not necessary for the health department to fall back on the general powers to abate an emergency situation, that the regulations per se would be the ground rules and would indeed be enforceable. If this could be brought about, we believe that order might come out of the present confusioned situation with respect to reservoirs not owned by a water purveyor.

SENATOR STURGEON: Thank you, Mr. Stead.

Questions from the committee? Senator Thompson?

SENATOR THOMPSON: No questions.

SENATOR STURGEON: Senator Quick?

SENATOR QUICK: I have a question. How would you propose to determine whether the people, or by other means that haven't been brought out here, perhaps, that how this water becomes contaminated? In other words, if a person is merely boating or fishing on a lake, do you think they are contaminating the water?

MR. STEAD: This is the subject matter of the next presentation, Senator. If you would not object until -- to deferring this question until Mr. Reinke's

presentation, I think the point will be covered and can be elaborated on.

SENATOR QUICK: Thank you.

SENATOR STURGEON: Questions from the staff?

It is very easy for us sitting here in these soft chairs to forget that you have been out there for an hour and one-half, so I am going to suggest about a two-minute recess to let you stand up and stir around a little bit.

(Short recess.)

MR. REINKE: I am E.A. Reinke, Chief of the Bureau of Sanitary Engineering. The bureau investigates and prepares reports on domestic water supplies and makes recommendations on water supply permits to the State Board of Public Health.

As Mr. Stead has told you, this paper is largely drawn from the report which we have made and the department has submitted to the governor and to the legislature and copies have been submitted to you for distribution to your committee. It is this gray report that you may have seen or will see when it is distributed.

SENATOR STURGEON: We will make a copy of that a part of the record. We do have copies.

MR. REINKE: Recreation on domestic water supply reservoirs and the adjacent watershed lands is a

matter of public interest because of the possibility of disease transmission resulting from such recreation and because of the attitude of a substantial segment of the water-using public concerning the aesthetic aspects of domestic water sources. Further, as our population increases in this era of more leisure time for all, there is growing demand for more recreational areas -- including those around water reservoirs. The State Board of Public Health officially expressed its position with respect to recreation at water supply reservoirs in a resolution adopted in 1955 as follows:

> "The State Board of Health recognizes its responsibility for promoting the total health of the people of California and is cognizant of the beneficial role of adequate recreational facilities in the promotion of health. The board recognizes that in certain situations recreational use of water supplies under proper restrictions is feasible."

DISEASE CONTROL

Much consideration has been given to the public health aspects of recreation on reservoirs. This is so because water supply has been, and will continue to be, a factor in transmission of gastro-intestinal diseases

such as typhoid fever and infectious hepatitis. Epidemics of these diseases have occurred when, under unexpected circumstances, water sources became contaminated with human sewage. The major disease potential in recreational use of water supply reservoirs is from improper disposal of human wastes of those using the reservoir and watershed area. The inability to completely control all waste disposal leaves a potential hazard of disease transmission. Experience with water supply reservoirs in California used for recreation has demonstrated that absolute control of human wastes has never been achieved. At this point, the concept of degree of risk becomes significant. Risk exists in most aspects of our environment and rarely is there absolute freedom from public health hazards. The question must, therefore, be asked, "Does recreation on water supply reservoirs create an intolerable or even significant hazard to the safety of related domestic water supply?"

In an effort to develop an answer to this question, the legislature allotted funds in 1959 to the State Department of Public Health to conduct an investigation of recreation on domestic water supply reservoirs. This investigation included a detailed sanitary engineering evaluation of sanitary conditions and a comprehensive program of laboratory analyses of water

quality in the reservoir.

In two reservoirs investigated in detail, there were more bacteria in the water where there was more use, though the increases in numbers of bacteria were not large. Where domestic water supply reservoirs are used for recreation, it is conceivable that with a combination of adverse circumstances -- including lax control of disposal of human sewage, heavy rainfall and gross failure in mechanical devices and operational control of water treatment facilities -- disease-producing organisms might enter the domestic water systems.

As a result of the engineering evaluation and laboratory analyses, it was determined that potential hazards created by the presence of large numbers of people using domestic water supply reservoirs can satisfactorily be controlled and the risk of disease thus kept to a tolerable level if there are:

(a) adequate sanitary facilities;

(b) continuous maintenance of these facilities;

(c) effective patrol of the recreational areas to assure reasonable conduct by the public;

(d) an adequate program of surveillance by public health authorities; and

(e) appropriate treatment of water before delivery to domestic water consumers.

AESTHETICS

Aesthetic considerations are also important. In recognition of this fact, state law requires that the State Board of Public Health, in acting on an application for a water supply permit, must determine that the water to be supplied is, under all the cimcumstances and conditions, "pure, wholesome and potable". The experience of this department through the years has been that many people place high value on the aesthetic quality of their water supply, including maintenance of clean conditions at the source of the community water supply. In 1945, Mr. Fred D. Pyle, Hydraulic Engineer for the Water Department of the City of San Diego, in a report to Ralph E. Swing, State Senator from San Diego, made the following pertinent observations concerning aesthetics:

> "Recreation brings to the reservoir areas many things offensive to the eye and nose, the principal objectionable materials being the various forms of excreta from the human body and things incidental thereto. Others are refuse from fish cleaning tables, remains of food and food containers,

newspapers, cigarette packages and empty bottles. These things can be all attended to so that the safety of the water is not affected provided that proper facilities are installed, proper regulations prepared and enforced and provided they are earnestly observed by patrons.

"The modern treatment plant will make the water safe but cannot erase the thoughts or feelings of those whose aesthetic ideals have been outraged by unsavory sights incident to recreation as it is generally practiced; or remove the psychological feeling of many people when some taste or odor is noticeable in the water that it is due directly to recreational activities."

FINANCING

Public health and aesthetic needs can be met if adequate funds are available for facilities, their maintenance and patrol. Past experience demonstrates that economic problems of recreational proposals have not been fully considered. Who is to foot the bill for recreation? The recreationists, through fees? The water utility, and through it, the water-using public? Or, the public-at-large, through some type of tax-

supported funds? Experiences in California have demonstrated that few, if any, recreational facilities at domestic water supply reservoirs have been adequately supported by fees. Therefore, adequate subsidy must be accepted as a principle and should be provided by the agency whose decision makes the recreation project possible. Subsidies may be difficult to arrange when two or more agencies are involved; for example, where a water district or a city owns or manages a reservoir and another governmental agency plans use of the reservoir for recreation.

CONCLUSION

It must be noted that basic conflicts of interest exist between those responsible for the production of pure, wholesome and potable domestic water supply and those desiring to promote and develop recreation on domestic water supply reservoirs. A basic principle in the water supply development has always been to obtain water supplies from the cleanest sources, to keep those sources clean and to provide necessary treatment for a high degree of safety and for a high quality water. Our department has always supported this principle. Recently, Stanley M. Dore, Chief Engineer of the Board of Water Supply for New York City, in an address at Stanford University, commented on this matter as

follows:

"It has been the policy of the New York City Board and the Department to build and maintain upland supplies, thereby obtaining good waters at the sources, and to render them into waters of excellent quality by impoundment and by vigilant sanitary practices during construction and maintenance to prevent pollution of the available waters, rather then to obtain polluted waters and take remedial measures to render them potable. Although such policy has been an economical one because of the fortunate availability of desirable watersheds, the thinking behind this policy is not purely one of economy but is based upon two general and fundamental beliefs -- (1) That prevention of pollution is a much sounder approach from a sanitary standpoint than remedial measures after pollution has occurred, and, (2) that the general public in the northeast section of this country, at least, much prefers, for apparent reasons, domestic supplies from

uncontaminated sources rather than from polluted sources even though the cost might be somewhat greater."

After careful review of all the data from past experiences and the recently completed investigation -- I might add here that in strict compliance to the regulations relating to the use of domestic reservoirs -- this department has concluded that under strict controls, recreation at domestic water reservoirs will not significantly degrade the water in the reservoirs. However, these recreational activities must always be subordinate to the production and delivery of a safe water which will be aesthetically acceptable to the water consumers.

Now, Mr. Chairman, in the interest of speed, I know the committee is in a hurry, I might comment on two questions that have been asked, one, I believe, by Senator Quick about the Sacramento River and the use of the water along the river.

Prior to 1924, when the City of Sacramento built its filter plant, we had regular outbreaks of typhoid fever in Sacramento which drew its water from the river. The river flows were low, and in the summer, not only did Sacramento get whatever sewage might have been discharged above, but at high tide, the sewage actually

ran up to the water works intake. They started chlorination, I believe, in 1913 to '15 and cut down the typhoid greatly by chlorination. But there was still a large residual.

I remember vividly in 1924, because I investigated it myself, after the city had its filtration plant. The Southern Pacific Company, which had big yards in Sacramento, used water directly from the river with chlorination as the city had done before 1924, and there were twelve cases of typhoid from the use of that water because of the sewage backing up. The Southern Pacific Company then connected with the City of Sacramento to get a safe water supply.

These conditions have not been overlooked. We have worked very closely with the City of Sacramento, the County of Sacramento, which has many sewage treatment plants in the vicinity, the Regional Water Pollution Control for the Central Valley and the Department of Water Resources in an attempt to set up safeguards to protect the raw water supply.

Now, another thing that was mentioned by Mr. Skinner was the use of water from Lake Mathews. One of the things he did not mention is that there are cities now taking water from Lake Mathews with only dual chlorination treatment. If recreation were used, those cities, in

addition to the Metropolitan District, would have to use more treatment in the treatment of the water supply.

SENATOR STURGEON: Don't you have a new study on the Sacramento River waters?

MR. REINKE: What is that?

SENATOR STURGEON: Don't you have a recently completed study?

MR. REINKE: The Department of Water Resources has recently completed a study. And the Department of Fish and Game and our department worked closely with them in the presentation. I think the Department of Water Resources can discuss that subject.

SENATOR STURGEON: That report hasn't been furnished.

MR. REINKE: : You will have to ask the Department of Water Resources. We have made our report to them.

SENATOR STURGEON: Could I ask you before our next meeting possibly in September if you will familiarize yourselves with that report because I am sure this committee is going to be interested in that Sacramento River.

MR. REINKE: We would be very happy to.

SENATOR STURGEON: It would be your opinion that the Sacramento River would still be contaminated

before it is treated, is that correct, or have you been able to control the sewage outflow from those cities upstream?

MR. REINKE: I think it might be well to get one point before the committee that can come before them in greater detail in September, but we have made careful studies, which have been reviewed by consultants for the Regional Water Pollution Control Board, which show that there would be the loss of far greater area of the Sacramento River and the American River for recreational use due to the damage from sewage discharges to the river than the damage which might be done to the source of domestic water supply leaving out the question of aesthetics. In other words, the natural purification that was referred to by Mr. Skinner, plus the present water treatment devised and facilities that are available to us would make it possible to make the water safe to drink.

I think I should point out here also that many eastern and midwestern cities have abandoned their sources from rivers and go to distant impounding reservoirs, as was indicated for New York City, because the people were not satisfied with the quality of water that they got even though there were no epidemics of disease from that water.

SENATOR STURGEON: I am sure we want to know about this later after we have had a chance to study that

report.

Senator Thompson, any questions?

SENATOR THOMPSON: No questions.

SENATOR STURGEON: Senator Quick?

SENATOR QUICK: No.

MR. STEAD: Could I just point out our position together in one sentence so that everyone understands the factor of these two presentations?

We believe that, as far as domestic water reservoirs are concerned, we have all the laws that are needed. We do have regulations. These regulations are enforceable. They may need review in some of the points that Dr. Harper has raised, and we are always in a position of continual review of the regulations in the light of any new information. We are not in that fortunate situation with respect to multiple purpose reservoirs. We believe that both new law and regulations are needed there, and this question must be decided of how big a reservoir is going to be before the question of water contact sports can be introduced into the picture. The whole area of multiple purpose reservoirs, we believe, must be clarified unless the condition worsened in the next few years.

SENATOR STURGEON: Thank you very much. And will it be possible for you to remain throughout the day

because I am sure we will be referring back?

MR. STEAD: We can stay until four o'clock.

SENATOR STURGEON: Mayor Davidson, I think we have just about time to get your testimony in from the looks of the length of it.

MAYOR CLAY DAVIDSON: I am Clay Davidson, Mayor of the City of San Luis Obispo. I would like to announce to the audience that I have copies of this presentation available here if they would like to pick them up.

It is with a great deal of interest that I appear before this august body as a representative of the City of San Luis Obispo. I would like, if I may, to speak to the question posed in your Notice of Public Hearing: Does a recreational program, involving boating, camping, fishing and other related activities, create a public health problem on lakes and reservoirs which are domestic water supplies?

My opinion is this is definitely a public health problem, and I submit the following information to verify my opinion.

As you may know, the City of San Luis Obispo has been using water for domestic use out of Santa Margarita Lake since 1943. This facility was constructed by the U.S. Army for a domestic water supply for Camp San

Luis Obispo and the City of San Luis Obispo, as stated in Permits 5881 and 5882 granted by the Division of Water Resources, Department of Public Works of the State of California, on the 9th day of October, 1941. Until the year 1950, water was used directly out of this reservoir without filtration. At that time, a filtration plant was constructed and water has been used since that time to this date by the City of San Luis Obispo.

In 1957 the city, as a water purveyor and holder of a permit from the State Health Department, applied for and received a permit which would allow limited recreation on Santa Margarita Lake. The operator of the recreational facility was San Luis Obispo County. Since the inception of limited recreation, the permit conditions have been violated annually as follows: unauthorized construction, improperly disposed sewage, lack of patrol, failure to apprehend and prosecute violators of the regulations and allowing overnight camping.

On January 16, 1961, the Board of Supervisors, as operators of the recreational facility, adopted as a guide Title 17 of the California Administrative Code as a regulatory means for development of facilities at Santa Margarita Lake. Since that time, there have been violations allowing overnight camping. There has not been

an amended permit filed to cover some of the existing construction, one of these being a swimming pool.

May I call your attention, Items 7626 and 7627 of Title 17, which read as follows:

"7626. APPLICATION FOR PERMIT. Any domestic water purveyor planning to allow recreational use on and around a domestic water supply reservoir, or proposing to continue the use of a domestic water supply reservoir on or around which recreation is now practiced without specific authorization in an existing water supply permit, shall submit an application for permit or for permit amendment to the State Department of Public Health."

"7627. DATA TO ACCOMPANY APPLICATION. Such application shall be accompanied by a detailed plan, including maps, showing the reservoir area and location of appurtenant facilities, a statement describing the details of the intended recreational use, a description of the program for regulating use of the area, plans and description of the recreational

and sanitary facilities to be provided, detailed description of maintenance and operation of these facilities and supervision of the people permitted in the area, the number of people to be allowed to use the recreational area and facilities and procedures to control number of users. Such detailed plan shall have been approved by the governing board of the water purveyor."

In the summer of 1961, the board of supervisors made a request that the city take action to amend its permit. A joint meeting was held, and because of the limited supply of water, action was deferred until this condition changed.

Deficiencies in the quality of water at Santa Margarita Lake have been a source of concern to the City of San Luis Obispo Water Department for a number of years. Last summer the quality of the water deteriorated to the point that the taste and odor was obnoxious, and the mineral and bacterial content failed to meet the state and U.S. minimum requirements. This was due, in part, to the high algae content of the lake, and, though the city requested that corrective measures be taken immediately, the only action taken by the county was to demand an

increase in the recreational use. The city soon discovered that neither the State Health Department nor the City of San Luis Obispo had any jurisdiction or control over the operation of the reservoir or the recreational activities and that the county was controlled solely by an "agreement" with the Army.

To date, no assurances of control of the water quality or recreation has been given to the city, only increased county demands for additional recreational use.

In early September, 1961, the city council authorized an engineering study of the water quality problem and steps that could be taken in the way of remedial or corrective treatment. The results of that study were presented in a report by Brown and Caldwell, dated October, 1961. After deliberation on this report, on February 14, 1962, the city wrote to the State Department of Health, asking five questions. In reply to this letter, the State Health Department answered on February 21, 1962.

The first question asked by the city was: Does the State Board of Health have legal authority to enforce the regulatory dicta of Title 17 of the California Administrative Code at Santa Margarita Lake?

The State Health Department replied, "No, because Santa Margarita Lake is not a 'domestic water

supply reservoir(s) operated by a domestic water purveyor and used solely or primarily for domestic purposes' as quoted from Section 7624 Title 17 California Administrative Code. However, in adopting the regulations, the board agreed that they should be used administratively as a guide in action on water supply permit applications. Specifically, for Santa Margarita Lake, the San Luis Obispo Planning Commission submitted plans for recreational development to this department for approval and agreed to comply with these regulations. We do not believe that this agreement gives us 'legal authority to enforce' them."

The second question asked by the city was: If the answer to the above is yes, will the State Board of Health exercise that authority under Title 17 at Santa Margarita Lake?

The State Health Department replied: "Since the answer to (1) is no, we can only recommend and urge the San Luis Obispo county authorities to comply with the regulations. In the past they have agreed to do so."

The third question asked by the city was: In the event that the City of San Luis Obispo agrees to amend its permit to allow overnight camping at Santa Margarita Lake, will the State Board of Health require the city to assume financial or any other type of responsibility for

the control of recreational activities or the results of recreational activities at Santa Margarita Lake?

The State Health Department replied: "In the event the City of San Luis Obispo 'agrees to amend its permit to allow overnight camping at Santa Margarita Lake,' the city must furnish the State Department of Public Health assurances that the construction, maintenance, operation and surveillance program will comply with state regulations. The control of recreational activities must be adequately accomplished by the concessionaire and the county authorities to the satisfaction of the local and state health departments. The question of financial or any other type of responsibility is one for local determination. Our water permit negotiations with the City of San Luis Obispo are handled under the provisions of the Pure Water Law (Sections 4010 to 4035 of the Health and Safety Code). The State Board of Public Health must find that the water furnished to consumers is such that under all circumstances and conditions it is 'pure, wholesome and potable and does not endanger the lives or health of human beings' before it issues a permit or an amended permit."

The fourth question asked by the city was: What enforceable legal effect do the "Drinking Water Standards" have? Are they technically applicable only to

water used on interstate carriers subject to federal quarantine regulations? Do they apply only to that part of a water system which is owned and operated by a water purveyor? Does the city's inability to meet present minimum standards jeopardize the city's existing permit?

The State Health Department replied: "By 'Drinking Water Standards' we assume you refer to the Public Health Service Drinking Water Standards, 1946. These have been used as a guide by this department and the State Board of Public Health has by resolution adopted the policy that the chemical standards must be met before full permit for a water supply system will be issued. The 'enforceable legal effect' which would result from definite failure to meet the standards would be a recommendation by this department to the United States Public Health Service that the supply be 'prohibited' for use on common carriers. The Standards define Water Supply System as including 'the works and auxiliaries for collection, treatment and distribution of the water from the source of supply to the free-flowing outlet of the ultimate consumer'. Thus they include but are not necessarily limited to 'that part of a water system which is owned and operated by a water purveyor.' The city's 'inability to meet present minimum standards' referred to in your letter could, we believe, be more appropriately

called 'failure to meet standards of bacteriological quality'. If this condition persists, the city's existing permit would be jeopardized; however, before taking any formal action, we would urge the city to develop and carry out improved operation and disinfection procedures to assure continuous compliance with the Standards."

The fifth question asked by the city was: What minimum safeguards are necessary to permit recreational use of Santa Margarita Lake and assure the City of San Luis Obispo of a safe domestic water supply?

The State Health Department replied: "The minimum safeguards necessary to permit recreational use of Santa Margarita Lake and assure the City of San Luis Obispo of a safe domestic water supply should be developed by the proponents of the project and submitted to us for evaluation. Guides to Evaluating Applications are given in Section 7628 of Title 17 California Administrative Code. This department does not furnish plans or proposals but is always willing to discuss them with applicants at mutually convenient times."

It is not the intent of this presentation to belabor a point of controversy, merely to point out a deficiency in the law or regulations governing the use of domestic water for recreation. May I clarify this in this

way: the city has a right to use of water out of a storage facility and holds a permit from the State Health Department. The operator of the recreational facilities on this domestic water supply is not controlled by the State Health Department and evidently cannot be under existing regulations.

It is our belief that the jurisdiction for establishing and enforcing the proper rules and regulations for maintaining pure, wholesome and potable domestic water supply reservoirs should be the responsibility of the State Health Department. Title 17 does not give the State Health Department any authority or jurisdiction over domestic water reservoirs if the reservoir is not owned or operated by a water purveyor. Certainly you must agree that it is ridiculous that the State Health Department fully protects water users where the purveyors operate the reservoir but has no jurisdiction if the same reservoir is transferred to a non-purveyor.

Section 7624 of Title 17 reads as follows:

"7624. APPLICATION OF REGULATIONS. These regulations are intended to be strictly applied to domestic water supply reservoirs operated by a domestic water purveyor and used solely or primarily for

domestic water supply."

We recommend this section be amended immediately as follows:

"7624. APPLICATION OF REGULATIONS. These regulations are to be strictly applied to domestic water supply reservoirs used solely or primarily for domestic water supply."

If the State Health Department permits the use of a domestic water supply for recreation, we believe the following steps should be taken:

1. These recreational facilities must be operated under the jurisdiction of the State Health Department with a permit, after the Health Department has made a thorough investigation of the reservoir and the proposed plans.
2. The application for the permit to include safeguards and specifications set up by the State Health Department strictly conforming to Title 17.

In the interest of safe use of domestic water supplies for recreation, we thank you for the opportunity of making this presentation.

SENATOR STURGEON: Thank you, Mayor Davidson.

Questions from the committee?

SENATOR THOMPSON: No question, Mr. Chairman.

SENATOR QUICK: Not for the time being.

SENATOR STURGEON: From the staff?

Thank you very much, Mr. Mayor.

We do have time for somebody who can get in here in fifteen minutes. Can you make it?

MR. WOODBURY: I am sure I can.

SENATOR STURGEON: I would like to state at this time, while this gentleman is coming up, that Mr. Nesbit from the State Wild Life Conservation Board was expected to be here today but was instructed not to by his department head because the board had not met and Mr. Nesbit was in no position to speak for the board. So if we would have insisted on his coming, he would have been able to speak only on his own views. He had a meeting, I think, on the Colorado River tomorrow, so I didn't insist that he appear.

MR. NORMAN E. WOODBURY: My name is Norman E. Woodbury. I am the Executive Director of the California Municipal Utilities Association, an association of some fifty-three municipally owned or operated electric, water and gas utility systems throughout the State of California. Our membership includes forty-six, municipal or public utility districts operating their own water systems.

We appreciate this opportunity to present to this committee the representative view of these members.

Article II, Sectin 19, of the Constitution authorizes municipal corporations to establish and operate public works for supplying its inhabitants with water under such conditions and under such regulations as the municipality may prescribe. By interpretation of the Attorney General this section does not preclude the state from controlling the purity of public water supplies by means of legislative enactments. (26 ops. Atty. Gen. 7 (1955).) The State of California through its Executive Department under the State Department of Public Health has concerned itself with regulations to safeguard drinking water supplies under the various regulations of Title 17 of the State Administrative Code. In reviewing the various Administrative Code provisions, it becomes apparent that these regulations are not to be construed as prohibiting local governmental authorities from establishing requirements regarding protection of water supply more rigid than the regulations under Title 17, where local circumstances warrant. The responsibility of safeguarding drinking water supply is a joint responsibility of both the state and local governmental agencies. This is proper and reasonable. It recognizes the existence of local authority as well as the responsibility

of the state itself. It would appear that the regulations under Title 17 were adopted for the purpose of insuring so far as possible safe drinking water for the people of this state and that these regulations direct the local authorities to take at least certain minimum precautions. And it also appears that if the local authorities desire to impose greater restrictions upon their operations, they were authorized to do so.

We are all aware of the increasing desire and need for recreational areas throughout the State of California. Water, certainly, provides many forms of recreation. We are also aware that water recreation involves numerous types of activities, all of such activities decreasing to varying degrees the purity and potable qualities of the drinking water. Also involved in the recreational use of drinking water supplies is the cost of personnel, capital outlay, operating and maintenance and inspections of the water area and adjacent areas to insure the safeguarding of the public health through the purity of the water supply.

We have no argument with the proposition that the state should set up minimum standards regarding the protection of the drinking water supply, and we further agree that no local governmental authority should have the right to operate on lesser standards. But with equal

fervor, we maintain that the local governmental agency be allowed to establish higher standards for the protection of water supplies where, in the considered judgment of the elected local representatives of the people, such higher standards are warranted.

We do not question advancement of the science of chemical or sanitary engineering in developing protection against health hazards in the drinking water supply. But these advancements in knowledge are available to local governmental authorities and when such information is combined with information as to expenditure of funds, characteristics of the local area for recreational purposes and the wishes of the people who are ultimate consumers of the drinking water, it would seem logical and proper for the local governmental agencies to make the determination as to what use shall be made of the domestic water supply for recreational purposes. If there be a demand for recreational use of the local water supply, there should be little doubt that such demand will be made known to the local governmental agency.

We ask therefore that this committee concern itself with re-evaluating the minimum standards now in effect and continue to leave to the local governmental authorities the power to establish greater protection

where, in their judgment, the health and welfare of the people require more stringent standards.

SENATOR STURGEON: Thank you very much.

Do we have questions from the committee?

SENATOR THOMPSON: No questions.

SENATOR STURGEON: Senator Quick?

SENATOR QUICK: No.

SENATOR STURGEON: Thank you.

MR. ALTON LEE: The chairman of the Board of Supervisors of San Luis Obispo County, through the Board of Supervisors, has asked me to present to you this letter that we have written to Dr. Merrill of the State Health Department.

SENATOR STURGEON: Would you like to read it into the record?

MR. LEE: I would just like to file it. I would like to file it with you and have you read it.

SENATOR STURGEON: Very well. Thank you.

I believe that we have a communication from the League of California Cities. I would ask Mrs. Porter if she would read that into the record.

MRS. PORTER: It is in the file, Senator.

SENATOR STURGEON: How about beaches and parks?

SENATOR THOMPSON: Mr. Chairman, we found it. I had it.

SENATOR STURGEON: Oh.

MR. JAMES WARREN: Mr. Chairman, members of the committee: I have no prepared statement for testimony to present at this time.

I have been asked by the Department of Parks and Recreation, by its director, to be here and make myself available to the committee for any questions you might want to ask.

Actually, it appears that the need for recreation is admitted to and fairly well-established. The problem that is before you now, can recreation be carried out on terminal reservoirs along with the need for domestic water supply in a safe manner, is perhaps not within the province of the Department of Parks and Recreation to answer. We do know that we would like to be able to develop --

SENATOR STURGEON: Can I interrupt you just a minute? Will you identify yourself for the record and the audience?

MR. WARREN: What is that?

SENATOR STURGEON: Would you identify yourself?

MR. WARREN: I am sorry, sir. I am James Warren, Deputy Chief of the Division of Beaches and Parks.

We do know that we would like to be able to

make recreational developments on certain terminal reservoirs throughout the State of California as funds are available and as safe means of so doing are also available. We have noted that there is a considerable difference of opinion by water purveyors as to what these safe regulations might be, and we are hopeful that, as a result of these hearings, there will be minimum standards adopted and set up that will allow development of recreation facilities on reservoirs in the future. Thank you.

SENATOR STURGEON: Questions?

SENATOR THOMPSON: No questions.

SENATOR STURGEON: Senator Quick?

SENATOR QUICK: No.

SENATOR STURGEON: I do have one or two.

MR. WARREN: Yes?

SENATOR STURGEON: As I understand it, your department will be charged with the surface use of these reservoirs as part of the State Water Plan?

MR. WARREN: Those that are connected with the State Water Plan, yes, sir.

SENATOR STURGEON: And also, as of now, you have no guidelines to go by except some that possibly the Department of Public Health might furnish for you?

MR. WARREN: That is true.

SENATOR STURGEON: Do you have anybody in your organization who will be charged with the responsibility for the safe keeping of these waters, the potability, or wouldn't that be your concern?

MR. WARREN: I would say that it must be part of our concern, but not primarily our concern. Also, it is quite likely that we would not be the final operators of recreational facilities on state water project reservoirs. These will be operated perhaps by local government or some other agency under a permit from the Department of Parks and Recreation. However, I am certain that as a part of the negotiations for this permit, there must be put into this contract or agreement proper safeguards for the protection of health and to prevent any problems from arising as a result of such recreational use.

These things perhaps the Department of Water Resources would be able to speak to you more specifically on, since under the laws and regulations for construction and development of facilities, recreational facilities and the State Water Plan, they do have the first crack, so to speak, at the planning of recreational facilities in connection with these projects. After they have gone into their preliminary planning, in cooperation with the Division of Beaches and Parks, then we take over at the point that money is approved, provided for the

construction of facilities to make the actual construction, make the actual development, and to either operate the development ourselves or to enter into an agreement or contract with some local agency to operate for us.

SENATOR STURGEON: Constructing this a little bit in my own mind, I believe that these construction projects are no part of this recreational bond issue that will be on the June ballot, isn't that true?

MR. WARREN: Yes, sir.

SENATOR STURGEON: This would be out of current revenues as they become available?

MR. WARREN: Yes, sir. The present law calls for the construction of recreation facilities to be taken care of out of the general fund. As I recall, there was a specific exception in the legislation authorizing the bond issue election that exempts state water projects from the use of these bond funds except in the acquisition of lands pertinent to recreation in connection with the state water proposal.

SENATOR STURGEON: Any further questions here at all?

Thank you very much, Mr. Warren.

I think we still have time to read this communication from the League of California Cities.

Mrs. Porter.

MRS. PORTER: "On March 26, 1962, we advised Mr. Robert L. Davis, the Executive Secretary of the Senate Fact Finding Committee on Public Health and Safety that a member of the league staff would appear at the May 2 hearing in San Luis Obispo to present a statement on the subject of recreational use of domestic water supplies. We find now that it will not be possible for a member of the league staff to attend the hearing because of a series of meetings involving city officials, and it is my desire, therefore, that this letter serve as the statement of the league in connection with the subject of the hearing.

"A great many cities within California are distributors of water for domestic purposes. As purveyors of water for domestic purposes, cities are primarily interested in the distribution of a pure commodity which not only meets the high standards established by the State Department of Public Health but which also satisfies the great majority of consumers accustomed to drinking the clearest and best tasting water possible. Any recreational use which defeats or diminishes this primary purpose, either for technical or practical reasons, should be rejected.

"We are familiar with the provisions of

Sections 4470 et seq. of the Health and Safety Code, and we are aware of the pressures which brought about the addition of these Code Sections in 1959. We also are aware of the provisions of Title 17, Article 5 (Sections 7623 et seq.) of the California Administrative Code. Certainly the latter regulations are necessary to supplement the provisions of the Health and Safety Code and to protect water consumers. We do not feel, however, that the provisions of the Health and Safety Code should in any way be relaxed or extended. On the contrary, we believe the financing provisions of Sections 4470 to 4471.4 clearly should be strengthened so that if the voters reject a feasible method of financing, they automatically reject the use of the reservoir facility for fishing or other recreational purposes. We assume always, of course, that if any such use is to be authorized by the voters of the purveying agency that the water supply distributed to consumers will meet standards established by the Department of Public Health and will not materially alter the taste of the product which is almost as important to most consumers as the purity of the water.

"We have surveyed a number of cities throughout the state in order to obtain the viewpoint of a representative group of city officials whose cities

distribute water for domestic uses. We find that where cities are retailers of water only or where their supplies come from wells, that generally the city officials of such cities are not concerned with recreational uses of reservoirs. On the other hand, we find that where cities have gone to considerable expense to acquire reservoir sites and store water for domestic uses, that they insist upon their continued authority to control the use of reservoir facilities. Most cities in this latter category are charter cities and not subject to the 1959 law, nor can they constitutionally be required to permit recreational use of drinking water.

"The following are three typical replies which we have received in response to our inquiry:

'Our municipal water system was three lake-type reservoirs, and the city has been subjected to a great deal of public pressure to open these areas for recreational use. Our position to date has been one of abiding by the Department of Public Health regulations restricting such use.

'While these lake reservoirs are for catchment and impounding, we serve over two thousand persons directly from the transmission pipelines prior to processing of the water through our filtration and treatment plant. The lakes therefore fall into the Distribution Reservoir

class. For this reason we support the present regulations relating to recreation on domestic water supply reservoirs as set forth in the California Administrative Code, Title 17, Article 5.

'Development of recreational use of the city's lake reservoirs is further complicated by the following factors:

'a. Cost of providing adequate roadway and parking areas, toilet and sanitation facilities, local domestic water and, of course, picnic and recreational areas.

'b. Possible fire damage to the watersheds would require preventive and suppressive facilities and adequate personnel.

'c. Recreation as such is not compatible with utility water supply operation since any water level draw down is the subject of protest, and it has been our experience that even very limited fishing activity increases the bacteria count and chlorine demand in excess of three hundred percent.

'd. Location of the lakes is remote -- in fact, in another county, closer to other cities and population centers than to our city, and the recreational use provided would serve a

much larger area than that of our citizens and taxpayers.

'In 1959 the city proposed establishing recreation at one of our lakes, limiting the same to fishing and picnicking, and we were advised by the Department of Public Health that we must construct a complete treatment facility at the outlet from the lake. This facility would cost approximately three-quarters of a million dollars and would be of little value to the water system since it would be a duplication of existing facilities to provide protection for a mere fraction of our customers.'

(2) -

'This is in reply to your letter of March 30, 1962, in which you inquired as to whether this city had a problem in the use of domestic water supply for recreational uses.

'Our domestic water supply is supplied primarily from the metropolitan water district and supplemented by the city-owned wells -- therefore, this is one problem we do not have to deal with. The degree of hazard to the public from the use of domestic water supply for recreational purposes would be largely dependent upon the type of recreation and the facilities which are necessary when such waters are used for that

purpose. Another factor which would certainly be germaine is the type of treatment domestic water is subjected to prior to distribution to the consumer.

'In conclusion, we feel that with proper control of the recreation involved and with adequate treatment of the water prior to being distributed, that no appreciable health problems would result from the recreational use of lakes or reservoirs.'

(3) -

'This will acknowledge your letter requesting information as to the policy of the city with reference to recreational use of domestic water supplies, such information being necessary in order that the league may testify before the Senate Fact Finding Committee on Public Health and Safety in San Luis Obispo.

'I discussed this matter with representatives of the water department yesterday, and I am informed that you will hear from them by April 12. As far as the City Department of Public Health is concerned, we strongly oppose any legislation that will remove the control of the State Department of Public Health and the appropriate health department the control of the use of the domestic water supplies for recreational purposes, and further wish to emphasize that when the municipality or the water district own the watershed areas, the limitations of its

use should be determined by that agency after consultation with the appropriate health department.

'The degree to which domestic waters and the tributary watershed can possibly be used for recreational purposes is somewhat related to the number of people likely to use such areas, which could be computed on a density or square mile basis, and is related also to the dilution factor involved, potential for settling out and the degree to which the water is treated prior to its use as domestic water supply.

'In past centuries, wars have been fought over the purity of water supplies, and as desirable as recreational areas are, for the well-being and happiness of our people, the necessity for the control of our domestic water supplies is of higher priority.

'The anticipated growth of population in California, it appears to me, makes it necessary that the State Legislature, the League of California Cities and others who are interested in the future development of California establish now the principles upon which the safety, purity and potability of our domestic water supplies can be maintained, both for the present and for the future.

'If recreational uses are to be permitted in any of the waters of the state or in the watersheds

contributing to those waters, every protection from both pollution and contamination must be maintained.'

"We hope that these comments will be helpful to you and to the other members of your committee, and we regret that we will be unable to attend the committee hearing on May 2. If there is any information we can be helpful in supplying to you or the members of the committee, please advise. Meanwhile, it is our view that the present provisions of the Health and Safety Code should in no way be extended or relaxed, but the sections should be amended to make certain that where recreational use is permitted, the use will pay the full cost of recreational facilities and the cost of such improvements as may be required by such recreational use to assure a continued supply of pure water. Sincerely, Richard Carpenter, Executive Director and General Counsel."

SENATOR STURGEON: Thank you very much. About all we can do in the way of questions here is ask you if you want to refer in some way back to the sport part of that because I doubt if Muriel can speak for Dick Carpenter.

(Noon recess taken.)

SENATOR STURGEON: The hearing will be in order. We have a lot of work to do this afternoon, and we would like very much to finish it up if possible.

For our first witness, would be Mr. Derby from the Department of Water Power, City of Los Angeles.

MR. RAY DERBY: My name is Ray Derby, Principal Sanitary Engineer for the Department of Water Power, Los Angeles. This statement that has been submitted to you has to do principally with Chatsworth Reservoir, one of our distributing reservoirs in the city, but the policy initiated therein is equally applicable to the other of our distributing reservoirs, of which there are about ten within the city limits.

The reason this is for Chatsworth Reservoir is because recently the question came up about using this reservoir not only for recreation on the surface of the reservoir, fishing and boating, but also for the use of the grounds for picnicking and hiking.

The purity and safety of public drinking water supplies are so basically necessary to the life and health of all the people that they preclude any use of the city's drinking water reservoirs for recreational activities with their constant threat of pollution.

This fundamental fact was clearly recognized as the Board of Water and Power Commissioners of the City of Los Angeles re-affirmed its long-standing policy and on March 16, 1962, adopted a recommendation that no recreational use be permitted of the Chatsworth Reservoir,

including the water surface and adjacent land area.

The recommendation submitted by Department of Water and Power management followed an intensive study and report by the city's water system covering all aspects of the problem.

The Reservoir's History and Current Functions

The report traced the past history and current functions of Chatsworth Reservoir, an important water storage facility at the westerly end of the San Fernando Valley with a capacity of ten thousand acre feet of water. Originally its water was used almost entirely for irrigation, but as its service area changed from farm lands to urban development, more and more of the water was used for domestic purposes. Water drawn from the reservoir goes directly into the pipelines which serve eight thousand acres of predominantly residential area lying westerly of Balboa Boulevard between Roscoe and Ventura Boulevards. Thus, Chatsworth Reservoir must obviously be protected against any exposure to pollution.

Chatsworth Reservoir under normal operations is filled during the winter months with water from the Los Angeles Owens River Aqueduct and is used as a direct-service drinking water reservoir. Because of its shallow depth, taste and odor problems sometimes develop in warmer weather when the water is at lower stages. Under

such conditions, the reservoir is taken out of direct service and the remainder of the stored water is released into the Los Angeles River channel and subsequently diverted into spreading grounds. It percolates into the underground water basin and becomes available for future withdrawal by pumping.

During several years of drought, it was difficult to fill all of the Los Angeles Water System reservoirs because of high winter demands for water, and therefore there were periods when the Chatsworth Reservoir was not in direct service. With the end of the drought early in 1962, the reservoir is again in direct service and is expected to so continue.

Future Expansion of Chatsworth Reservoir

Plans have existed for a long time to enlarge Chatsworth Reservoir for additional storage when it should be needed, and that need is now foreseen. Future storage requirements and the advent of Feather River Aqueduct water will require the Department of Water and Power to go ahead with this enlargement. The reservoir when filled to present capacity covers about six hundred acres of the total reservoir property of one thousand three hundred acres. When the reservoir is enlarged, the water will cover most of this land area.

The Problem of Protecting Drinking Water From Pollution

The water system report called attention to two basic kinds of water: "Raw water" -- meaning water that has been exposed to contamination and which will have to be purified by filtration or other means before it is safe for human consumption. "Finished water" -- meaning water which is already in pure enough condition so that with normal protection by chlorination, it is safe to use as drinking water. Public health authorities prefer a domestic water supply to be fully protected from human contact rather than depending upon filtration and treatment methods to overcome pollution after it has occurred. Los Angeles can be proud of its record of never having had a case of water-borne disease traceable to its municipal water system.

Some cities have no choice, as, for example, many cities on large rivers like the Ohio River. Their sources of water are polluted, and these cities install filtration and treatment systems at great expense in their effort to purify the water to the extent required for domestic use.

Some of the outlying reservoirs of San Diego are subject to contamination from their surrounding watersheds. Since their water must be filtered and

treated anyway to be made safe for use, and since the problem exists with or without recreational use, San Diego permits recreational use of such reservoirs. But there are no domestic water agencies, within the knowledge of the Department of Water and Power, that allow recreational activity on their finished water reservoirs or on the grounds adjacent to the water area. Any such use would put the water back in the raw water classification and require its subsequent complete treatment.

Protection Needed for Chatsworth Reservoir

Chatsworth Reservoir, as shown in the report, is a distribution and finished water reservoir. Health considerations dictate that no recreational use be allowed of the water or adjacent land unless the water is subsequently given complete treatment. In addition to the large filtration system which would have to be installed, extensive storage of the filtered water would be needed to provide for fluctuating demand, and pumps would have to be installed and operated to regain water pressure lost as a result of treatment.

This would involve huge costs for installation and operation. It is financially impossible to cover such treatment, storage and pumping costs with recreational income. For example, for many years the

Department of Water and Power has permitted controlled recreational use at highly popular Crowley Lake Reservoir in the High Sierra region. The administration of recreational activity at Crowley Lake Reservoir was placed under the Department of Recreation and Parks. That department's revenues from Crowley Lake operations have not been sufficient even to cover its cost of operation. These operational expenses for recreation are very small compared to the cost of treatment plant and repumping operations.

The problem is increased by the fact that Chatsworth is only one of many distribution or finished water reservoirs that furnish drinking water to the people of Los Angeles. An exception cannot be made for it. Any policy to open it to recreation would in all fairness have to apply uniformly to all similar reservoirs of the Department of Water and Power. The resulting cost for filtration and repumping would be astronomical.

The Department of Water and Power Does Cooperate In Recreational Use of Water Facilities Where It Is Safe To Do So

The Department of Water and Power permits recreational use, including boating and fishing, on its Crowley Lake, Grant Lake and Pleasant Valley reservoirs

in the High Sierra watershed. It does not object to recreational use of the numerous natural lakes and streams which form part of the city's water supply derived from the eastern slope of the High Sierra. In addition, the DWP cooperates with recreation seekers by requiring the lessees of some two hundred thousand acres of DWP lands in the High Sierra region to keep at least seventy-five percent of this acreage open to the public recreational enjoyment. The DWP has provided land and water and other kinds of cooperation to the State Fish and Game Department for large fish hatcheries and rearing facilities.

All this is consistent with the policy of keeping Los Angeles' finished water or distribution reservoirs closed to recreation. Water from High Sierra lakes and streams eventually flows down the Owens River and through an open canal to Haiwee Reservoir, which is used as a "purifying reservoir". Raw water open to recreational use north of Haiwee Reservoir goes into storage at Haiwee for approximately two to three months. During this extended period of storage, there is no recreational contact with the water, and environmental conditions effectively eliminate pollution. Water leaving Haiwee Reservoir is finished water and thereafter is protected from contamination. The water flows south to

the city in a closed and protected aqueduct. It is stored in reservoirs protected against human contact. It is pure and safe when delivered to Los Angeles domestic consumers, which may be in as short a time as six days after leaving Haiwee Reservoir.

Summary

In summary, the report of the water system has shown that:

1. The water of Chatsworth Reservoir is needed as drinking water for domestic consumption.
2. It must be protected against pollution for the sake of the large number of valley people who use domestic water from this reservoir.
3. To provide additional future storage, the Department of Water and Power plans to enlarge Chatsworth Reservoir, and this will require using most of the reservoir property.
4. There is a vast difference between raw water that may be used for recreation, as contrasted with finished water in distribution reservoirs which must be protected from any exposure to pollution from recreational use.
5. Chatsworth Reservoir as a finished water

reservoir needs such protection.

Recreational use with resulting pollution would necessitate a very large cost for filtration and treatment, an expense out of all proportion to the recreational values to be received.

6. An exception could not be made to open Chatsworth Reservoir to recreational use without opening all reservoirs of Los Angeles to recreation, and the resulting costs for filtration would be overwhelming.

Recognizing that the purity and safety of public drinking water is vital to the life and health of all the people and that the water must be protected against pollution, the Board of Water and Power Commissioners has re-affirmed the policy that no recreational use be permitted of Chatsworth Reservoir.

In addition to that, Mr. Chairman, I would like to add just two other comments. One was covered very adequately in the statement of the Department of Public Health's Bulletin which has been issued, the matter of the incompatibility between a drinking water reservoir and one that is used for recreational purposes, particularly fishing.

In the matter of a reservoir in which fish are

to be reared, you want to catch a fish, you want them good and healthy and fat, that means a biologically rich environment. For water to be satisfactory for public use and to be as free as possible from taste and odor, it should be in a biologically sterile environment. The two just do not go together. Algae will grow in any open water. That is what the fish like. On the other hand, it causes tastes and odors which are quite objectionable to the consumers. And in treating the reservoir to destroy the algae, many fish are often killed. And in keeping down the algae, it means the fish themselves do not have satisfactory food. So that those two are in constant conflict.

The second point I would like to bring up in that certain reservoirs that are used for recreational purposes at the present time, reliance is placed to some extent on keeping the recreationists back at a certain distance from the reservoir outlet. With the idea being that it would take, theoretically, the water to go so far from this distance, maybe fifteen hundred feet, two thousand feet, or some such value, it may take the water, theoretically, several days or weeks to go that distance. We have found that the theoretical displacement of water in a reservoir may oftentimes be at very great variance with the actual conditions. We have one

reservoir that has a theoretical retention time of three to four weeks, and yet, under certain conditions of wind, we have found that water will go from the inlet to the outlet in a matter of six hours so that you do not get the protection that you think you do by basing your retention time on a theoretical value.

I believe that is all that I have to say at the present time.

SENATOR STURGEON: Questions from the committee?

SENATOR THOMPSON: Your statement on fish now, in fact, water has to be a little bit dirty so fish can survive good. Now, do fish pollute water?

MR. DERBY: That depends upon exactly what you mean by pollution.

SENATOR THOMPSON: Bring the germ count up, the fact that there is a great number of fish in the water.

MR. DERBY: They would add organic material to the water. If I might clarify myself, I didn't say that the water has to be dirty, but it should have a certain amount of organic content.

SENATOR THOMPSON: As a layman, that is always a good explanation.

MR. DERBY: The water can be relatively clear,

but the fish themselves, they have waste products, and that adds organic material to the water which, as nitrates, phosphates and other things, upon which algae will grow. The algae themselves attack these nutrients in the water. They live and die. As they decompose, they add tastes and odors to the water. That is why we try to keep the algae down. The fish, of course, need algae and other minute forms for their own existence. They even try to keep down such things as duck grass in the reservoirs because that adds a certain amount of organic material undergoing decomposition, puts products in the water that will generate tastes and odors.

SENATOR THOMPSON: Yes, I see more or less of what you mean, but still, in order to keep water organically clean and germ-free, would it be necessary to hold the number of fish down?

MR. DERBY: The question was that in order to keep the water relatively free of pollutant, should it be necessary to hold the number of fish down. We have some reservoirs, Silver Lake is one of our largest in this particular matter, some two thousand acre feet, in which there are no fish at all. There used to be fish in there. They cleaned the reservoir. They refilled it, and we did not permit any fish to go in. We since have. We have to chlorinate the water because the watershed grows algae

enthusiastically, it being largely well water and of high mineral content. As a reservoir for drinking water purposes, it would be in generally better condition if it did not have fish in it. The less of organic matter, whether it is live as fish or whether it is more or less inert as vegetable matter, the less that is in the reservoir, the better the reservoir will be for human consumption.

SENATOR THOMPSON: I see. Of course, I could be facetious and then to say, wouldn't it be better to hold the number of fish down to allow fishing, but I won't put that in the form of a question.

MR. DERBY: There is no question, the fishermen could hold it down. They could pull fish out as much as they wanted to, and then they would be after us to restock the reservoir with some more fish so they could do some more fishing.

SENATOR THOMPSON: Thank you.

SENATOR QUICK: Mr. Derby, you spoke about the water in San Diego County where they have recreation, their lakes down there, is that correct?

MR. DERBY: Yes, sir.

SENATOR QUICK: Are you opposed to that, think that they are doing a wrong thing down there?

MR. DERBY: Well, I won't say I am opposed to

it. That is their problem.

SENATOR QUICK: I would like to have your opinion on it, what you think about it. Speaking generally, you pointed out San Diego County. I would just kind of like to know what you think about it.

MR. DERBY: Their water, under the conditions, I think would be similar to any natural stream or natural lake which would have fish in it. If I was to have a choice of taking water from an environment with fish or without fish, I would prefer the water from a reservoir without fish.

SENATOR QUICK: You still didn't answer my question. You are doing a very good job of getting around it.

MR. DERBY: Personally, I would prefer -- I can't say I am opposed to what San Diego is doing.

SENATOR QUICK: We are speaking state-wide. I am trying to use that as a comparison to other places. What is the ill effect of it? What is the bad part of it in San Diego County?

MR. DERBY: They have to filter their water. I am speaking for Los Angeles.

SENATOR QUICK: I appreciate that. I appreciate that.

MR. DERBY: In areas where they have to filter

their water, just as it is in the east along the Ohio and the Mississippi River, they have to get water from the stream which has much more pollution in, that would be in any of our reservoirs here.

At one time, I think the Ohio River was about one-third full of sewage. But it is the only water they can get, and they have to make the best of it.

Our policy, and we believe, and I personally believe, that if you take a water such as we have coming out of Haiwee Reservoir that meets the Public Health Service standards for drinking water, as far as bacteriological quality goes, and if we can keep it in that condition, I would rather have it in that condition, leave it in that condition, than to submit it to possible re-pollution or contamination and have to purify it again. I am trying to answer you.

SENATOR QUICK: I admire you. You are not pointing your finger at San Diego County. However, you are not bringing the subject up.

SENATOR STURGEON: Staff?

MRS. PORTER: I have had a question handed to me, Senator.

"It is my understanding and knowledge that recreational boating will pay for its use if safely developed in California. Would you have any suggestions

as to funding recreational development sites and impounded water areas, boating, camping and picnicking?"

MR. DERBY: I don't think I quite get your question.

MRS. PORTER: Apparently, this question is whether you would have any suggestions as to the financing of recreational development.

MR. DERBY: No, I wouldn't.

SENATOR STURGEON: Probably have some to finance non-recreational development.

SENATOR THOMPSON: Mr. Chairman, on that, if I understand it right, hasn't boating and recreation of that kind developed into one of the largest industries in the State of California, bringing a great deal of money to everyone connected with it?

MR. DERBY: I believe there is no question about that. More and more, boats are in use and on trailers and on the highways than there used to be.

SENATOR THOMPSON: The highways are cluttered with them, and certainly I would say that we have to recognize that all through the hearing, this hearing and the hearings that we may have on this subject.

SENATOR STURGEON: Senator Quick?

SENATOR QUICK: Just one other question that I had in mind on this Chatsworth Lake. Do you have fish in

the lake?

MR. DERBY: There are fish in the lake, yes.

SENATOR QUICK: Do they contaminate the water?

MR. DERBY: Contamination as defined by the state is the public health, is a polution with a public health aspect to it or condition that is dangerous to public health. Polution is one of more aesthetic consequences. So I cannot say that the fish themselves pollute the lake because I don't believe they add any public health problems to it. However, certain types of fish will cause some difficulty from an aesthetic point of view.

For instance, bottom feeders, such as carp and others that are always rooting around, particulary in a shallow lake, will rile up the water anc cause quite a bit of turbidity in the water.

SENATOR QUICK: Do you permit boating, skiing on the lake?

MR. DERBY: No.

SENATOR QUICK: The fish just keep on accumulating in there?

MR. DERBY: From time to time, we cooperate with the Fish and Game. As a matter of fact, last week, the Fish and Game people in the Los Angeles area spent two days on the lake getting out bass for restocking other

areas. Occasionally, if we get too much carp in there, we call the man in who picks them up for -- to make cat and dog food out of them. Not much use for anything else.

SENATOR QUICK: You think fishing or boating on that lake would be detrimental?

MR. DERBY: We do, yes.

SENATOR QUICK: Thank you.

SENATOR STURGEON: I just have one question. You mentioned in your prepared statement, at the time you were upholding your reservoir, your Haiwee Reservoir, how do you determine the amount? Do you just dump the water in one and take it out of the other?

MR. DERBY: That is right. That is, again, a theoretical time.

SENATOR STURGEON: This is what I was wondering.

MR. DERBY: Taking the capacity of the lake, which is of about sixty thousand acre feet, and assuming that the inflow-outflow is approximately five hundred second-feet or one thousand acre feet per day, that gives you approximately sixty days. If it is less than that, if you took out half that amount, why, of course, it would be a longer retention period.

SENATOR STURGEON: You do have your theory that your water moves by gravity rather than by turbulence.

MR. DERBY: It does move with turbulence because we have north winds on that lake which move the water. We have measured that by adding chemicals to the upper end of the lake. We find it gets to the outlet end in two or three days, whereas, theoretically, it should take many times that.

SENATOR STURGEON: That would be on the surface of the lake. Is there turbulence throughout the body of water?

MR. DERBY: It occurs down to -- It may be throughout the body, at least down to what they call a thermocline, which is a point at which -- above which the lake is in circulation, below which the lake is stagnant. That varies with the season. In the wintertime, the lake may be in vertical circulation so that the wind blowing to the south or north, as the case might be, will cause the water to circulate throughout the entire lake. In the summertime when the -- they have the summer stagnation in the reservoir, a thermocline is formed and below -- that is the point where the temperature will gradually drop until it reaches this point. Then it will drop very rapidly, and below that, the water will be stagnant. Now, above that area, the water will move just as it would if the lake was in entire circulation. That point will be anywhere from fifty foot to one hundred feet or so,

depending on the particular lake and the time of the year and how the lake is operated.

SENATOR STURGEON: Further questions?

SENATOR QUICK: One more question. Isn't it a fact that San Diego gets most of their water from the Los Angeles area?

MR. DERBY: That I can't say now. I believe there is a gentleman here from San Diego that can probably give you that information. I know they get a good deal of Metropolitan Aqueduct water now. With the dry years they have had lately, I imagine that they get most of it.

SENATOR QUICK: Thank you.

SENATOR STURGEON: Thank you very much, Mr. Derby, for your attendance, and I am sure you have got the trend of what is happening here, and I hope we will see you again in the fall.

MR. DERBY: Thank you.

SENATOR STURGEON: Probably we will suggest some questions to you that you are not willing to give us to asking.

I think we will hear next from Mr. Graham from the City of San Diego. We have kept him here a long time, and he is a long way from home.

Would you identify yourself for the reporter,

and you may proceed any way you like.

MR. RALPH E. GRAHAM: I am Ralph E. Graham, Director of Utilities for the City of San Diego. What I would like to present to you today is essentially a statement of our operation of the impounding system and the recreation use thereof.

The City of San Diego has conducted some type of recreational program on its reservoirs since 1913. During this time, the primary purpose of all city reservoirs has been for domestic water supply, while the secondary use for recreation has been a valuable by-product.

At the present time, the City of San Diego has a population in excess of 600,000 with an area of over 250 square miles and is located in a metropolitan area of more than 1,000,000 persons.

Impounding System

All of the city's reservoirs are located in the sparsely populated surrounding mountains at distances up to fifty miles from the metropolitan area and are so situated that no sewage or industrial wastes enter the impoundment. The entire area is basically an arid one with an average rainfall of approximately ten inches on the coast and up to thirty inches at the higher elevations in the mountains. Normal rainfall impounded within the

city's system would supply approximately forty percent of the city's needs at the present time. The balance of the city's water requirements are imported from the Colorado River. Such imported water can be stored in five of the city's reservoirs in order to provide emergency supplies. All water used within the city is filtered and chlorinated prior to use, but it must be noted that treatment has been found to be necessary due to turbidity, taste and other factors not related to recreation. The Utilities Department maintains a high quality water which meets all bacteriological standards, including the certification by the United States Public Health Service for supply to inter-state carriers.

Recreation Program

The city has ten impounding reservoirs which are used from time to time for some phase of its recreation program. Activities such as fishing, waterfowl hunting, propagation of fish, picnicking, camping and hiking are conducted depending upon water levels, fishery conditions, patronage, fire hazards and other similar factors. All activities involving water contact, such as swimming, wading or water skiing, are prohibited.

On those reservoirs used for public fishing purposes, a warm water type fishery is conducted with an

experimental trout program conducted during spring months at two of the reservoirs. Several specie of bass, bluegill, crappie and catfish are found at the various sites.

Boats, floats, parking areas and sanitary facilities are maintained by the city, while a conesssionaire located at each reservoir handles the rental of outboard motors and the sale of tackle, food and beverages.

During the 1960-61 fiscal year, the city experienced its lowest rainfall of record with resultant low reservoir levels. During this period, six reservoirs were open for public recreation at various times for a total of 340 days. Patronage during that time amounted to 80,321 fishermen, 4,630 campers and 492 hunters. For several years prior to the 1960-61 season, over 100,000 fishermen days per year were experienced. It is estimated that approximately twenty percent of the patrons are from areas outside of San Diego County.

The typical schedule at a city reservoir is one in which it is open to public fishing on a Wednesday, Saturday and Sunday basis. This type of schedule permits adequate time for the maintenance of the facilities and of the area.

The city carries on an extensive stocking

program in cooperation with the State Department of Fish and Game. Two small reservoirs are presently used exclusively for the propagation of warm water fish. A city-owned fish transfer truck is utilized to distribute fish to the other city reservoirs.

In order to maintain a high type fishery, the Utilities Department has a fish and game specialist on on its staff to review fisheryconditions and advise on all lake recreation matters.

Protection of Public Health

All phases of the city's recreation program are carried on in accordance with Article 5, Title 17, of the California Administrative Code, which details the regulations relating to recreation on domestic water supply reservoirs. In addition to these regulations, the San Diego City and County Health Department has cooperated in the establishment of rigid but reasonable sanitary standards. Periodic inspections are made by the Health Department's representatives and close liaison maintained at all times.

Sanitary units of either the can type or pump out type are maintained around the shore line of each reservoir open for public use and with such units spaced approximately 1,000 feet apart. These units are maintained by city personnel.

A closed area is maintained around each terminal reservoir outlet structure at varying distances depending upon the reservoir level and draft. At these reservoirs, all water used for boat washing is pumped away from the reservoir and used for irrigation. In order to enforce the sanitary requirements and to insure that no bodily contact activities occur, reservoir patrols are maintained both on shore and by boat.

While occasional coliform counts are found in the influent to our filter plants, no evidence has been found in the city system that such bacteria were of human origin. In fact, a study of the problem in 1952 indicated that bacteriological counts decreased during periods of public fishing on the reservoirs. It is believed that this was due to the decrease in bird life whenever fishermen were present. Since that time, it has been noted that the coliform counts are lower from those reservoirs open to the public as compared with closed reservoirs. The average coliform content of waters from the reservoirs open to recreation is roughly equal to that of water from the Colorado River Aqueduct.

Financial Support

The entire lakes recreation program is on a self-supporting basis in order that the water consumer shall not be charged for any part of such a program.

Use fees are charged at each reservoir to offset the costs of maintenance and operation and all capital improvements. The attached chart No. 17-A indicates the financial experiences of the city's reservoir recreation program for the last fifteen years. It may be noted that a net loss has occurred during the last five years due to the extremely low water levels of the reservoirs.

The over-all gain for the last fifteen years of $138,000 will be greatly reduced during the coming year by major capital improvement programs which will enhance the recreational value of the reservoirs.

Local Support

A Citizens Advisory Commission assists the department in policy and program matters. This commission has no direct administrative control since all of its actions are in the form of recommendations to the city manager. This commission has been a valuable source of ideas and contact with the sports-minded public. Local sportsmen's groups also assist in many activities such as transfer of fish from propagating reservoirs to other reservoirs and in assistance during special fishing days for youth groups. On these occasions, they assist by showing the children proper fishing techniques, patrolling the lakeshare for safety, parking control and other such activities. This assistance greatly reduces

the cost of operation and thus benefits the entire program.

Summary

The lakes recreation program in San Diego has been valuable to the people of the area but would not be possible without the wholehearted cooperation of many public agencies and the local sportsmen's groups. The program and facilities will be improved as time and finances permit, but will always be operated within the framework of operating the system for water supply purposes.

The City of San Diego firmly believes that the conduct of our reservoir recreation program must be a matter of control by the local water utility since the primary purpose of our water system must be to maintain a high quality domestic supply.

SENATOR STURGEON: Thank you, Mr. Graham.

Senator Thompson, do you have a question?

SENATOR THOMPSON: No questions, Mr. Chairman.

SENATOR QUICK: I have one question.

SENATOR STURGEON: Senator Quick.

SENATOR QUICK: I didn't get your name, sir.

SENATOR STURGEON: Graham.

SENATOR QUICK: Mr. Graham, this water, for instance, that comes out of Morena Lake and goes into San

Diego, that is all fenced in so that livestock does not have access to that water, or are you familiar with it?

MR. GRAHAM: I am very familiar, and it is not fenced.

SENATOR QUICK: In other words, the cattle in the area, they drink and wade in the water as they so desire?

MR. GRAHAM: Yes, sir. The Morena Reservoir is what we might call a tertiary reservoir. It flows through Barrett before it goes to Otay and then into the filter system.

SENATOR QUICK: The tests that you make in the water, is it at the lake after it arrives or at some other destination?

MR. GRAHAM: We take tests at the lake from the influent to the filter plant, out of the affluent from the filter plant and at a number of different locations through the distribution system.

SENATOR QUICK: Do you find any material difference between the tests you make at the lake, between that and at your storage tank down in San Diego?

MR. GRAHAM: The tests at the reservoir and at the influent to the filter plant are essentially the same.

SENATOR QUICK: Thank you very kindly.

SENATOR STURGEON: Staff?

I note that you do have camping on at least part of these reservoirs.

MR. GRAHAM: Yes, sir.

SENATOR STURGEON: Relating that to your patrol, how heavily do you patrol that? You mentioned that you patrolled on the water and on the shore.

MR. GRAHAM: At each reservoir that is open during the open day, we have at least one man on patrol at all times. Part of that is during -- by boat and part is onshore.

SENATOR STURGEON: By all times, do you mean twenty-four hours?

MR. GRAHAM: Whenever the area is open to the public. In other words, that is from sunset to sunrise. to sunset.

SENATOR STURGEON: I am speaking specifically about camping, areas where you put up camping.

MR. GRAHAM: We do not patrol it at night. We have adequate sanitation facilities and, near the areas, and do not feel that patrol is necessary.

SENATOR STURGEON: Have you had reports of clandestine swimming after the patrol left?

MR. GRAHAM: We have such reports, and undoubtedly it does happen occasionally. One of the camping areas is at Morena Reservoir, the tertiary

reservoir.

SENATOR STURGEON: Also you mentioned an idea, I think, that bears some further explanation, and that is this matter of sportmen groups actually contributing some voluntary labor. I think this would apply to the cost of operating this thing. To what extent now would you say percentage-wise that you can expect sportmen's groups to, well, just simply to show up and do this work, and do you have a problem with no-shows where you have to hire personnel to fill in for sportsmen groups that have agreed -- not necessarily sportsmen groups, but individuals who have agreed to help in this program and in patrolling and clean-up?

MR. GRAHAM: We maintain a paid staff for patrol, and the control of boating activities, a minimum staff, normally two at any open reservoir. But for all special days, such as our youth days, opening day at any reservoir, the local sportsmen's groups respond very nicely. We have excellent cooperation from the San Diego County Fish and Game Association, a group of sportsmen who help us out. They are a semi-uniformed organization with arm patches that identify them, and they have lent assistance whenever requested.

SENATOR STURGEON: The reason I ask that was I noted in the report from the Department of Public

Health that they do have problems in their study with peak periods where your skeleton staff is not able to cope with them. It appears that this might be a good answer at other places if the sportsmen are willing to cooperate to this extent.

One more question: You indicate that your program has been self-supporting, and, in fact, you have a surplus that you can use for expenditures to improve the program. Could you give us some kind of idea of what your schedule of fees is? What does it cost to get into a place to fish? If you want to picnic? If you simply want to go in and look around, or if you want to stay all night? Do you have those figures?

MR. GRAHAM: The normal fishing use permit is one dollar per day.

SENATOR STURGEON: Do you have annual permits?

MR. GRAHAM: No, sir. The camping fee is also one dollar per day. We do not charge for those that want to come in and hike or look around.

SENATOR STURGEON: Thank you very much.

SENATOR QUICK: I would like to ask one more question. You talk about your facilities that you have there for these campers and fishermen. What kind of toilets and so forth do you have for them? Where are they located with reference to the high water level of the

lake?

MR. GRAHAM: At the Morena Reservoir, we have flush toilet facilities that go into a septic tank and then a drain field, which is located above high water, but it is within the reservoir basin.

At Lower Otay, the camping facility is over the ridge out of the reservoir basin. It is located very close-by, but there is no problem there. It is outside the drainage basin.

SENATOR QUICK: You apparently don't have any problem at all with using your lakes for recreation, for fishing, boating?

MR. GRAHAM: We get along very fine due to, I think, of the high degree of cooperation between the public agency and the local sportsmen's groups.

SENATOR THOMPSON: You do permit private boats in your reservoirs?

MR. GRAHAM: Yes, sir.

SENATOR THOMPSON: Has your public health officer -- I believe the statement was made as to the effect of boats within the reservoir. Have you had any experience with the hazard because of the use of a boat because they might have picked up from the highway and so on, they might pick up --

MR. GRAHAM: We have not noticed any effect

from that probably due to the fact that the number of private boats is extremely low. We have a number of boats available at each reservoir.

SENATOR THOMPSON: These are boats that are brought in on trailers and so on, are they?

MR. GRAHAM: We have very few boats brought in on trailers.

SENATOR THOMPSON: But they are permitted?

MR. GRAHAM: Yes.

SENATOR STURGEON: Is there somebody here from the East Bay Municipal District? Would you like to present your testimony now?

MR. JOHN PLUMB: Well, I wasn't planning to, but since you have asked me, I will. I also happen to have a few copies of what I am going to say.

SENATOR STURGEON: Fine.

MR. PLUMB: My name is John Plumb. I am the Assistant Secretary of the East Bay Municipal Utility District.

If I may digress for just a moment, Senator Thompson referred to us a little while ago as East Bay Mud.

SENATOR THOMPSON: I have heard your own people refer to your organization as that.

MR. PLUMB: I just thought I would let you

know, Senator, we are in the midst of a rather expansive public relations campaign trying to get people to call us East Bay Water.

SENATOR THOMPSON: Then we have no problems.

MR. PLUMB: Since 1923 the East Bay Municipal Utility District has spent half a billion dollars to develop the Mokelumne River as an abundant source of clear, soft mountain water for both domestic and industrial use. It is obvious, that having spent this vast sum to give the 1,000,000 people in the East Bay one of the finest water supply systems in the world, the district is going to view with trepidation any action which would lower the quality of that water.

From the point of view of the sanitary engineer, multiple use of a domestic water supply reservoir -- particularly recreational use -- is not the ideal situation. Such multiple use poses a real threat to the quality of the water, and it poses a less immediate but more important threat to public health.

At the same time, the district recognizes that, as a result of California's population explosion, there is a growing demand for multiple use of such reservoirs -- particularly for boating and fishing -- and that this demand is going to increase steadily. Also, during the past few years, legislation has been passed setting up

procedures under which such reservoirs can be opened for recreation, and specifying the public health controls which must be applied.

East Bay Water is ready to meet its legal obligations in this field -- indeed, under the provisions of Assembly Bill 286, the district is presently working with a citizens committee toward the possible opening of two of its reservoirs in the East Bay for limited recreational use.

However, there are four points at which the district would draw the line, and the district would hope that the California Legislature, in its wisdom, and the responsible state agencies, would go along with these same four limitations:

First -- East Bay Water feels that the strictest public health controls should be maintained. The regulations regarding recreational use of domestic water supply reservoirs, as contained in Title 17, Public Health, California Administrative Code, are excellent. They limit the activities of people on such reservoirs, they specify adequate sanitary facilities and their maintenance, they set up policing standards, and they insist on adequate treatment of water dervied from such reservoirs. These regulations should never be weakened.

Second -- East Bay Water is firmly on the side of the Department of Public Health in opposing any bodily contact sports on domestic water supply reservoirs. If they should ever be allowed -- even on the best-controlled reservoir imaginable -- the public health hazard would cease to be marginal and would become acute. There is still a great deal that science does not know about water-borne diseases -- especially virus diseases. It is generally accepted now that infectious hepatitis is a water-borne virus disease. During the past fifteen years, according to the Robert A. Taft Sanitary Engineering Center in Cincinnati, Ohio, seventy newly-discovered viruses have been added to the list of those found in human wastes. Presumably, some of these can be transmitted via a water supply. It has long been established that certain bacterial diseases are commonly transmitted by water: typhoid, cholera and dysentery among others. Chlorination and filtration can protect water users if the reservoirs are kept safe. But if swimming and water skiing were to be allowed, the margin of safety would go way down. It has been demonstrated conclusively, in experiment after experiment, that coagulation, sedimentation and filtration will not remove certain disease viruses. Only these processes, plus chlorination at an extremely high level, will do the job,

and the necessary concentration of chlorine needed would definitely affect the quality of the water as regards taste. East Bay Water doesn't ever want to find itself in this position.

Third -- East Bay Water believes that local jurisdiction and control of reservoir recreation is a "must". The district would oppose any move to give an administrative department of the state government control over recreation on domestic water supply reservoirs. The district would oppose such a move on the grounds that public agencies should have complete control over their own facilities, which were paid for and are maintained with local tax moneys and with water service revenues. The people who own these agencies should have the right to determine to what uses the agency's facilities are to be put. The district would oppose any state-level control because it believes this would lead inevitably to a lowering of water quality standards. Whatever the responsible agency, it would almost certainly be more interested in recreation than in water quality, and this could be the foot in the door for bodily contact.

Fourth -- East Bay Water would hope that, in the future, before a domestic water supply reservoir is opened for recreational use that a thorough and objective financial feasibility study will be made, based on the

criterion that these facilities, as far as possible, should be self-supporting. It is not just that tax money, paid to build and maintain a water system, should be used to subsidize recreational facilities for which there is no provable demand.

In the case of the one reservoir, Pardee, which we do have open, a demand was presented to us. Everyone said there was a demand. We have run it for three years now, and we find that there isn't any provable demand. We feel there should be such a demand provable before any more of these reservoirs are opened.

The district does not believe, at this time, that there is any need for additional legislation in this field. The provisions of Title 17 are more than adequate. The provisions of AB 286 have not yet been applied to any specific reservoir or recreational development. East Bay Water is in the process of making this application now. The most important aspect of AB 286 which has not yet been applied in practice is the provision that the question of recreational use of reservoirs can be put up to the voters. It would perhaps be good sense to wait and see what their decision is.

SENATOR THOMPSON: Mr. Chairman.

SENATOR STURGEON: Senator Thompson.

SENATOR THOMPSON: You said that part of the

statement could be omitted because it is repetitious, but you would have no objection to it all going in?

MR. PLUMB: Certainly. I skipped it because it is a reiteration of things that have been said before, Senator.

SENATOR QUICK: No questions.

SENATOR STURGEON: One question here. I imagine that you would be buying water from the State Water Agency, would you not?

MR. PLUMB: No, we will not.

SENATOR STURGEON: You will not?

MR. PLUMB: No, we are not connected with that in any way.

SENATOR STURGEON: You are in a wonderful position, and I have no questions either.

SENATOR THOMPSON: You get most of your water from the same, from the Tuolumne River, the same as the City of San Francisco, Hetch-Hetchy?

MR. PLUMB: No, we get our water from the Mokelumne River, a different source whatsoever, different watershed.

SENATOR THOMPSON: That is for the City of Oakland?

MR. PLUMB: It takes in Oakland. Oakland is one of thirteen cities in a large unincorporated area, a two

hundred forty square mile area which we serve.

SENATOR THOMPSON: Then Hayward in Alameda County?

MR. PLUMB: Hayward is not included.

SENATOR THOMPSON: No, but they will probably be getting a supply of water from the South Bay Aqueduct.

MR. PLUMB: That is my understanding, yes.

SENATOR THOMPSON: And there is a reservoir that will be constructed for that purpose for Southern Alameda County. However, you are not --

MR. PLUMB: I am not involved in that. I agree. I have heard the same thing, Senator, yes.

SENATOR THOMPSON: Well, I wouldn't ask you any questions about that at this time. However, I think that this whole thing will evolve in that lake and also the one in Santa Clara County, and the question is coming up in all of the local water supplies in our district, perhaps with the exception of you folks.

MR. PLUMB: Yes.

SENATOR STURGEON: I do have one further question. You mentioned that Pardee had been open for some three years now, isn't that correct?

MR. PLUMB: Yes.

SENATOR STURGEON: What has been your experience there so far as the quality of the water and

the additional expense, if any, of making an acceptable water to deliver to your customers?

MR. PLUMB: There has been no additional expense as far as improving the quality of the water. Pardee, of course, is one hundred miles from the East Bay. The water has to go through aqueducts, and before it goes to the consumer, it is stored in five terminal reservoirs for varying periods of time, and then after that, after treatment, we have filtering and a chlorination process, it goes into distribution reservoirs so there is several steps that the water takes after it leaves Pardee, so there has been no additional expense.

I might also say, however, that the water at Pardee itself, there has been no change in the quality of the water that we have been able to determine. However, we have some very, very strict regulations there.

SENATOR STURGEON: I would be interested as to what those regulations are.

MR. PLUMB: Well, Title 17. I think I am correct in stating that many of the provisions that were put in Title 17 were put in with the view to opening Pardee Reservoir. Those rules and regulations were drafted just about the time we were considering opening Pardee. They were more or less put together together.

SENATOR STURGEON: You have strict conformance --

MR. PLUMB: We adhere strictly to Title 17 right down the line, yes.

SENATOR THOMPSON: When this bill was passed, now, I made a statement this morning, the East Bay Municipal Utility District did not oppose the legislation and that they did have a filtering system that would take out most anything, is that correct?

MR. PLUMB: I am not -- I want to be sure I know which bill you are referring to now, Senator. You are talking about AB 286?

SENATOR THOMPSON: I am not sure either. This is four to six years ago.

MR. PLUMB: Assemblyman Masterson's bill, is that the one you are talking about?

SENATOR THOMPSON: I wouldn't be sure. I can remember it, and I can remember that statement being made. What I am trying to determine is how efficient these modern filtering systems are.

MR. PLUMB: Well, we like to think that ours is very, very efficient.

SENATOR THOMPSON: That is the statement that was made, yes.

MR. PLUMB: We think that we can take care of

just about anything with it.

SENATOR THOMPSON: Well, I am glad you said that because of the statement that I made this morning.

MR. PLUMB: We will find out if and when these terminal reservoirs were open. We are in the process of perhaps opening them now.

SENATOR THOMPSON: Thank you.

SENATOR STURGEON: And thank you very much, sir.

I think now we will hear from the State Department of Water Resources if we have somebody here.

MR. WILLIAM L. BERRY: Mr. Chairman and members of the committee, I am William L. Berry, Division Engineer, Division of Resources Planning of the Department of Water Resources.

The Department of Water Resources welcomes the opportunity to make a contribution to today's hearing in the field of the interrelation of water uses. The following statement has been prepared to assist your committee in its deliberation as to whether a recreational program involving boating, camping, fishing, swimming and picnicking creates a public health problem when conducted on lakes or reservoirs which are sources of domestic water supplies.

The Department of Water Resources, in its

planning for the State Water Facilities, has taken into consideration the increasing importance of recreation in the development of California. With the advent of increasing leisure time, coupled with the increase in the average family's recreational budget, and with the improvement in transportation facilities, recreation has become of state-wide significance. This increasing demand for outdoor recreation necessitates that full advantage be made of every water body which is capable of contributing to the recreational opportunities of the state. The department is aware of the possibility that inadequately planned or supervised recreational use of a project reservoir may interfere with the other stated objectives of a water project, particularly where domestic water supply is involved. The legislature set forth its policy on this subject by means of Senate Bill 779, passed in 1961 (Water Code Section 12944), which provides:

> "In the operation of reservoirs, other than terminal reservoirs from which water is supplied for domestic use without purification treatment after withdrawal from such reservoirs, constructed under this chapter, the department, to the extent that it is compatible with public

health and safety requirements, shall permit the use of the water for body contact sports."

With respect to this code provision, the department does not contemplate that domestic water will be withdrawn from project reservoirs and delivered to users without adequate treatment.

The department is currently engaged in developing the form of an agreement which will enable the Department of Parks and Recreation to carry out its responsibility for the design, construction, operation and maintenance of recreational areas at units of the State Water Facilities. The department intends to include in this agreement provisions which will provide for review of plans prior to construction and/or operation and for periodic surveilllance of the recreational activities after commencement of operations, to insure that they do not defeat or impair the other purposes of the project. The department feels that it can never relieve itself of the responsibility for insuring that one use of a state water project does not unreasonably inhibit another.

The problems associated with the recreational use of water supplies are many and, in some cases, quite subtle. Each must be isolated and provided for while the

the project is still in the planning stages, well in advance of the commencement of project construction and operation. It is always cheaper and preferable to prevent problems than it is to correct them. These problems, in general, are associated with the water quality changes or the unsightliness which can be engendered by recreational use. These conditions may be caused by discharge of inadequately treated sewage into the reservoir or to tributary streams from improperly operated onshore sanitary facilities. Improper refuse and garbage handling causes unsightliness and interferes with the scenic values of the reservoir. The uncontrolled use of sanitary facilities on boats and accidental discharges of oil, gasoline and bilge water into the reservoir are also threats to water quality.

Another important consideration is the conflict between domestic use and recreational use in the matter of algae control. From time to time, domestic water supply reservoirs experience the development of taste- and odor-producing algae. It is conceivable that algae control measures may be delayed by the fear that the control measure would hurt or possibly destroy the fishery of the reservoir. By suitable and active monitoring and control programs, the problem of algae control might be solved early enough to prevent damage to

either recreation or domestic use. In the event that such a happy solution is not possible and a choice has to be made between recreation and domestic use, the need to sustain the health and well-being of the community outweighs, in the opinion of the department, needs for recreational pursuits, particularly inothose cases where alternative sources of domestic supply are not available.

The Department of Water Resources, in order to cope with these problems as they relate to the department's projects, is dedicated to the principle of prevention rather than cure. In furtherance of this principle, our recreational and water quality specialists are working with the State Departments of Public Health, Fish and Game, and Parks and Recreation, and interested federal and local agencies in the preparation and review of plans to insure that properly and adequately designed facilities are included in recreation areas at state water projects. Successful operation of recreational facilities must provide for adequate surveillance of the reservoir and onshore developments to assure protection of public health and maintenance of aesthetic values. This course of action has as its purpose the insurance that proper public health standards, which will protect both the recreational users themselves and the users of project water, are met.

That is my statement.

SENATOR THOMPSON: Didn't the Department of Water Resources because of the quality of the water being lowered in the delta consider a siphon under the San Joaquin River in that part of the delta so that water could be supplied more directly to the South Bay Aqueduct and to the Los Angeles area?

MR. BERRY: Yes, Senator. There is or has been considered in the planning for the delta water facilities a siphon under the San Joaquin River. At such time as the water project is in an advanced state of development and the demands for water from the project are high, it may be necessary to convey the northern water underneath the San Joaquin River. This is largely related to the problem in intrusion of saline waters from San Francisco Bay, which otherwise might contaminate or decontaminate the supply.

SENATOR THOMPSON: I asked that question. I did ask practically the same question this morning, and somewhere it lost track along the line.

MR. BERRY: I would say, Senator, in this respect whether or not a siphon will be necessary at some time in the future is still moot. But it is under consideration.

SENATOR THOMPSON: Then I will ask this

question: When the South Bay Aqueduct is finished and water is being sent further south for -- and will be used for domestic use, the delta will act more or less as a reservoir, will it not?

MR. BERRY: Well, it will be a reservoir without a great deal of storage. It is rather a point of diversion, Senator.

SENATOR THOMPSON: What I am getting at: Apparently then in the delta, which will supply a great deal of water to many areas for irrigation, for domestic use and so on throughout the State of California, is the Department of Water Resources planning on any controls over swimming, fishing, boating, water skiing and so on in the delta?

MR. BERRY: No, sir.

SENATOR THOMPSON: Thank you.

SENATOR STURGEON: Senator Quick?

SENATOR QUICK: No questions.

SENATOR STURGEON: Staff?

I would like to go off into an area that maybe is not yours. That is, are you familiar with the operation of the Davis-Grunsky money?

MR. BERRY: Yes, that is mine.

SENATOR STURGEON: Real fine. I am not exactly sure how to phrase this question, but is it

possible to use Davis-Grunsky money to actually move dirt with to build a dam as part of the project cost?

MR. BERRY: Yes. There are actually three or four parts to Davis-Grunsky. One of them provides for loans toward the construction of a project, and another, provides grants.

The loans are appropriate, the money loaned by the state is appropriate for any project purpose. I mean, it could go into the construction of the dam or whatever it may be.

The grant provisions of the Davis-Grunsky Act would insert limitations within certain limitations provide grants that are based upon the recreational values or benefits that accrue from the construction of the dam and reservoir; that is, they do go toward the payment of the cost of the water conservation facilities that are associated with the bulk of the recreational value.

SENATOR STURGEON: These then can be used in actual construction on the thought --

MR. BERRY: Yes.

SENATOR STURGEON: -- that without a dam, you don't have any impoundment, and without the impoundment, you have no lake upon which to draw water?

MR. BERRY: That is correct. This cannot be used, Senator, however, for the construction of the

onshore facilities for recreation, that is, the sanitary facilities, the boat ramps, the facilities to take care of the public around the lake.

SENATOR STURGEON: Access roads?

MR. BERRY: No, not access roads. It is just that go into the actual construction of the facility.

SENATOR STURGEON: Well, I think at some place in the law, the administration of it, there is almost a blanket three hundred thousand dollars per reservoir?

MR. BERRY: Yes, although the -- that's what the state and the Department of Water Reservoirs and the State Water Commission can authorize on their own. They can go back for more from the legislature.

SENATOR STURGEON: This was my next question. If you do get more money, then you get it from the legislature?

MR. BERRY: That is right.

SENATOR STURGEON: I am thinking, I am sure, you already know of the bill that was passed this year authorizing Monterey County to request, I think, three million eight hundred thousand dollars.

MR. BERRY: That is correct.

SENATOR STURGEON: Where do those funds come from?

MR. BERRY: Well, they come from one hundred

thirty million dollars that was set up by the legislature and part of the -- part of the act that authorized the bond which set up the state water facilities back in the fall of 1961.

SENATOR STURGEON: That would be bond money?

MR. BERRY: Yes. It is California Water Fund money.

SENATOR THOMPSON: That could be oil money, too, couldn't it?

MR. BERRY: Yes.

SENATOR STURGEON: This isn't necessarily then bond funds?

MR. BERRY: Not necessarily, no, sir.

SENATOR STURGEON: Thank you.

SENATOR THOMPSON: I might ask the same question about the San Luis Dam, if that is ever built, if they contemplate any restrictions on the recreational use of the water in that?

MR. BERRY: To my knowledge, it is not contemplated that there will be any restriction on the use of that, that is, body contact sports, I think would be.

SENATOR THOMPSON: Part of it will be used undoubtedly for domestic water also?

MR. BERRY: Recreation at San Luis is being

planned. Of course, the department's basic responsibility -- but there is a committee composed of representatives of the department, the Bureau of -- and the county, several counties, and many local agencies on there jointly working out the plans for recreation in San Luis.

SENATOR STURGEON: If there are no further questions, thank you very much. You have been most helpful.

MR. BERRY: Thank you.

SENATOR STURGEON: Major Cronin from Camp San Luis Obispo, is he here?

Anybody here to represent the United States Army?

Perhaps they will come in later.

From the State Department of Fish and Game, Mr. Calhoon.

MR. ALEX CALHOON: Mr. Chairman, members of the committee, I am Alex Calhoon from the Department of Fish and Game.

The Department of Fish and Game heartily supports efforts to open and keep open public water impoundments for fishing and such other recreational uses as are compatible with sanitary requirements.

As long as adequate sanitary provisions to

protect drinking water quality and the public health are insured, there should be no objection to opening domestic water supply reservoirs to provide for recreational uses such as angling.

A big step is this direction was made in 1959 when Assembly Bill Number 286 was passed by the legislature and signed by the governor. This legislation resulted in Sections 4470 -- 4471.4 of the Health and Safety Code. In essence, it authorizes county boards of supervisors to request the governmental agency owning such a reservoir in its county to open the water to public fishing and the surrounding land for other recreational uses and sets up a procedure for plans, permits and elections to accomplish such an opening.

Only minor opposition to this bill was encountered as evidence by its passage in the Assembly by a seventy to four vote and in the Senate by a thirty-five to two vote.

An excellent example of recreational use of domestic water supply reservoirs occurs at the reservoirs operated by the City of San Diego. Certain of these waters have been opened to controlled fishing for many years.

Cachuma Reservoir, Santa Barbara County; Casitas Reservoir, Ventura County; and Gregory Reservoir,

San Bernardino County, are other reservoirs in Southern California that are opened to public access.

In the central portions of the state, Pardee, Hunter and Schaads Reservoirs, all in Calaveras County, and several reservoirs in Marin County are open to angling. Various regulations are in effect at the various waters, and the activities of anglers have not had an adverse effect on the water quality.

SENATOR THOMPSON: No questions, Mr. Chairman.

SENATOR QUICK: I would like to ask one question.

SENATOR STURGEON: Senator Quick.

SENATOR QUICK: I am wondering whether the climatic conditions between the north and the south, being from the southern part of the state, I realize it is much hotter than it is in the north, and does that have any particular effect in your mind on the recreation on various water reservoirs for recreation purposes, fishing and so forth?

MR. CALHOON: It is difficult to generalize on the north-south basis, Senator. In the south, generally speaking, in the low land areas, you have lakes which are primarily, I am speaking now of angling recreation, which I would be best-qualified to discuss, in the low land

area in Southern California, the lakes are universally warm water lakes. However, there is a growing trend to use them for trout in the winter, and they are ideal for that purpose.

In the central valley and the coastal area, up as far north as San Francisco, much the same conditions pertain. Furthermore, and in the mountains, you have the trout fisheries in the summer, and the lakes are either remote or frozen or not very useful in the winter. But that is the general pattern.

SENATOR QUICK: It wouldn't have any particular effect on it, the different types of fishing?

MR. CALHOON: It simply changes the pattern of recreation, but almost any lake, particularly if it is near a population center, can be used in some appropriate way for recreation.

SENATOR QUICK: Thank you very kindly.

SENATOR STURGEON: I had a myth or a dream shattered, something here that I have carried around with me ever since I was a little boy, from the testimony today. Maybe you can salvage some part of it.

I have always thought that fish in a stream or in a lake tended to purify that rather than pollute it. Would you comment on that?

MR. CALHOON: Well, Senator, my comment, I

think, would have to be to refer that to the Public Health Department.

SENATOR STURGEON: Down goes my dream.

MR. CALHOON: We are in favor of having fish in lakes and streams.

SENATOR STURGEON: Thank you very much.

(Short recess.)

SENATOR STURGEON: The hearing will be in order.

Mr. George Bell, is he here?

MR. BELL: I was going to pass mine, but now that you have called on me, which I thank you for, Senator, I would like to.

SENATOR STURGEON: Would you come forward?

MR. GEORGE BELL: What I would like to say, possibly no one is conversant with the watershed area. It takes in the Los Padres Forest, which is open each year to hunting, and they have camping grounds, and they are putting in new facilities all the time, and that is in the area.

SENATOR STURGEON: You are speaking of Santa Margarita Lake at this time?

MR. BELL: Yes, this is the watershed area. Anyhow, that area takes in, as I say, the Los Padres, and there is two townships, twenty-eight sections. In

the mountain area, why, you could almost double that, get the watershed area that water runs over, so that is what I wanted to bring out, and thank you very kindly.

SENATOR STURGEON: I think you have reference to a possible pollution contamination?

MR. BELL: Yes, contamination, if there is any.

SENATOR STURGEON: At this point, I would like to ask a question of a non-scheduled witness, and that would be Mr. Born. I heard him say there was a difference legally between contamination and pollution.

Would you tell us what it is, Mr. Born? Mr. Born is the Hydraulic Engineer of the County of San Luis Obispo.

MR. BORN: I make a pass on that as a legal definition. That is defined in the Water Code, and Mr. Derby, I think, made some reference to that.

SENATOR STURGEON: Mr. Stead, would you answer that for us?

MR. STEAD: In a nutshell, contamination and pollution have special meanings in the Water Pollution Act different from the dictionary meanings. The special meaning is that the term contamination is restricted to those impairments of water quality which constitute a threat of disease to human beings through disease agents or chemical poisoning. Pollution is all other impairments

exept nuisance. And nuisance has its general meaning under the public nuisance statutes. It has a special meaning under the water pollution statues that it must result from an unreasonable practice.

I am sure this clarification has left you almost as confused as you were before you started.

SENATOR STURGEON: Yes, Mr. Stead.

MR. STEAD: It's been pointed out to me that I forgot to say that an additional restriction is that under the water pollution law, the only types of impairment referred to are those resulting from a discharge of sewage or industrial waste. Any other natural factors are not encompassed in the term.

SENATOR STURGEON: Thanks again.

Now, we have Mrs. Jan Mower representing the California Boat Council.

MRS. JAN MOWER: Mr. Chairman, members of the committee, I am Jan Mower, Managing Director of the California Boating Council. Usually I am put on first, and I never get an opportunity to snipe at anybody.

I would like to say that Dr. Harper's quotations from Dr. Smith's testimony, given in Richmond in 1956, seem to be taken in sections, the sections that he wanted to use to support his own stand. I have likewise used Dr. Smith's testimony and taken what I

thought substantiated my stand.

But to be perfectly fair, I have ordered a copy of the entire presentation mailed to the committee.

I would like to say that water treatment in California and everywhere practically west of the Mississippi is well behind the times as compared to the east, and another thing that has not been quite clarified here today is the Los Angeles Metropolitan District stated that the Colorado River water was amazingly pure, and I might say that the Colorado River water is used extensively for boating, swimming, animal drinking, water skiing and many other uses. And San Diego uses the same water.

Now, to get into the written portion.

Man's basic needs for water are in the main directed to drinking and domestic uses, irrigation, power and recreation. Since recreation has always appeared to be the lesser of man's basic needs for water, it has resulted that recreation received the lesser interest. In combination of reasons, we are now being forced to properly meet man's fourth basic use of water.

Due to our changing society, many things which were once considered a matter of purely local concern, subject strictly to local regulations, if any, have now become a matter of state-wide concern, creating the

necessity for state-wide control.

We can now take two courses. Due to the increasing tendency to shorten the work week, there is consequent increase in the amount of leisure time, and public recreation and public recreational facilities have become a matter of state-wide concern which definitely relates to the public welfare.

This is not new information -- for the past ten years, the public has been trying to show their needs for recreational uses of impounded waters. Today, however, the need has become critical enough to lead me to the statement that if we do not cooperate and if we do not work to effect the answer, and immediately, the other course will be that of legislation. In truth, business (and I will broadly define business as managerial agencies controlling the water reservoirs) resents government interest or interference. They will tell you they have too much government control now, but the reason they have it is pretty obvious.

There is little value in reiterating the reports of the California population explosion; that we are soon to look at 16,000,000 people and all the consequent problems; or the state's mounting water shortage to meet all of man's basic needs. I do believe, however, it is important to give you some idea of the number of

recreational water users we have in California and will refrain from trying to project the future growth in this area because I think it a hazardous occupation.

Statistically, as of March 31, 1962, there were 265,396 undocumented boats registered in California. It is figured, fairly accurately, there remains at least another ten percent or another 26,500 boats which have not yet registered as required by law. Another approximately 30,000 small boats are exempt from registering.

Thus we see a total of about 318,474 small boats owned in this state. Of this figure, we calculate about seventy percent are trailer-type craft and cannot be (or should not be) used on our ocean and tidal waters (the Delta a noteworthy exception).

Breaking this into people and using the basic 4.3 family unit, we now see a total of 1,369,438 boat users in California -- not including crews and friends who most certainly guest-list every boat, large or small.

Water skiing has become a very popular sport and another recreation meeting the acute water shortage. Although water skiing can be tied solidly with boating, it is interesting to note that less than one-half the approximate 700,000 water skiers do not own boats and are not a member of the boating family. Their needs are for

calm waters special courses, and there just are not enough such places open to their sport. Needless to say, the water skiers look at the water reservoirs longingly and cannot understand why they are excluded. While water skiing under certain conditions would likely lend no problems, under other conditions it would. We will go into this later.

Sport fishing licenses sold in California in 1961 totaled 1,486,003 (incomplete total as of 4/18/62.) Again we can tie fishing to boating, but not as substantially as water skiing to boating, for while a great many boat owners are fishermen, the majority of fishermen are not boat owners.

So in total you have at least 3,355,441 boaters, skiers and fishermen in California. Overlap them if you must, they still use the waters for recreation, and they are getting a mighty voice assembled. I might add -- this is not a voice to ignore.

The State of California has made some very extensive and exhausting studies of the recreational use of areas by the campers, hikers, picnickers, bird-watchers and swimmers. Most of these recreations could tie to impounded waters, but where or how does one draw the line?

So far there has been no formula offered, and

it appears there cannot be a definite stipulation drawn that one or all recreations should use one or all impounded waters.

Past testimony. In 1954, Charles E. Smith, M.D., then Dean of the School of Public Health, University of California, and President of the California State Board of Health, made this statement:

> "In conclusion, I wish to stress the following facts: (1) water reservoirs may afford a healthfully recreation resource for a community; (2) because water is a vehicle of disease transmission, when a choice must be made between safe water or recreation, the former must always prevail; (3) recreational use of water supply reservoirs calls for a high level of supervision and control of people using the area to prevent their wastes entering the water; (4) the control of the recreational activities must be adequately budgeted and financed; (5) there must be adequate treatment of water derived from such sources; and (6) the determination on the basic question of recreational use must be made locally.

"We must recognize that permitting such recreational activities constitutes a risk, but that the risk can be minimized to a reasonable and tolerable level if the conditions which we have described are met."

I cannot entirely agree with Dr. Smith's item (6) as to the determination of the basic question of whether or not recreational use will be made of a particular water confinement. Though many local jurisdictions have gone a hundred or so miles to obtain fresh water from the mountains, at the cost of the district to be serviced, and are obviously quite jealous of the use of it -- the question remains. Is it the water of the people of California or the people of the particular district?

Limited recreational uses of impounded potable waters: The following discussion will lend itself to the fact that I am somewhat of a recreational non-conformist. I cannot believe that all reservoirs can or should be opened to fishing. I personally want top-quality drinking water, and I highly oppose the invasion of property used for basic human needs if such invasion will deprive me of this need.

There seems to be a correlation of factors of use and of distance from the water storage area to the

point of actual distribution for consumption. Also there is a correlation of use to type of treatment.

Taken from the report made by Stanley Scott and John F. McCarty, Bureau of Public Administration, University of California, April, 1957, I believe this sums up the situation very well:

Principal Points of Controversy

"There are six major areas of controversy regarding the recreational use of domestic water supply reservoirs.

1. By common consent, public health considerations are given top priority. There is general agreement that recreational use and domestic use of water supply reservoir do not conflict under the right circumstances. The crucial problem is that of deciding whether the characteristics of a particular reservoir and domestic water supply system embody a health safety factor sufficient to permit limited recreation. Domestic water purveyors and health agencies insist that a reasonable margin of safety must be maintained. Sportsmen's and fishermen's associations contend that the margin of safety actually required is

sometimes unreasonably wide.

2. Since opinions differ, the question of who should decide whether or not to open a reservoir becomes significant. At present, the final decision on opening a domestic water supply reservoir to recreation is made by the water purveyor owning the reservoir, although the consent of the California State Department of Public Health is also necessary. The recreationists would prefer the procedure whereby an agency other than the water purveyor could formally and publicly raise the issue of opening a reservoir. The water purveyors oppose any move to take from them their present control over the opening of the reservoirs.

3. Health authorities point out that effective administration and control are essential if recreational use of water supply reservoirs is not to cause contamination. The opponents of recreational use contend that effective control is almost impossible to achieve. Those favoring recreational use argue that the administration problems can be overcome, and that the public benefit from

recreation will justify the additional effort necessary.

4. Opponents hold that recreational use cannot be made financially self-supporting but that instead it will subject the water consumer to unjustified charges to pay for recreational facilities and maintenance and possibly to install additional purification facilities. The proponents of recreational use contend that the use can be made self-supporting through the charging of fees.

5. The opening of a reservoir to recreation raises the question of legal liability of the owner and operator for injuries, drownings and property damage," which is not in your presentation but is in the report I am having mailed to the committee. There is a full report of the legal side of this which has not been brought up here today which will be of interest to you.

SENATOR THOMPSON: Mr. Chairman, can I ask a question?

How long is that report?

MRS. MOWER: How long is it?

SENATOR THOMPSON: The one you say you will

mail to the committee.

MRS. MOWER: Well, here it is. It is an entire transcript of a proceedings of a conference that was held in Richmond, California, in 1956. Within that is the legal presentation. I just brought that to your attention so when it does come through to you.

SENATOR STURGEON: Is this report available or is the one you have transcribed?

MRS. MOWER: It is out of print. However, I have one copy coming for the committee. This copy here today I would be happy to loan you. I have it for a month from the University of California.

SENATOR THOMPSON: Did you contemplate a reprint of it?

MRS. MOWER: Well, I have a copy coming to me. If you want more, why, we can perhaps get them reprinted.

SENATOR THOMPSON: If there are more copies, then we can do as we have done in the Department of Public Health. If there is only one, I don't believe we should make it a part of the record.

MRS. MOWER: If I can, I will get one more for every member, but it is out of print.

SENATOR STURGEON: The question is, we would like to make it a part of the record, if possible. If copies are not available, then we can't do that, but we

will use it.

MRS. MOWER: I have only one copy that can be made part of the testimony.

SENATOR STURGEON: Except that it wouldn't be available to everybody who is getting this record. But we will use it in our study when the record is written.

MRS. MOWER: I think it has a lot of valuable information. It is old. Pardon me, again. It is an old record, but it is relatively current, amazingly current.

"6. In addition to the above-mentioned points of controvery, there are other general policy considerations. The water purveyors contend that their job is to provide clean and pure water for their customers, and that any activity which may interfere with the performance of their primary task is not justified. Those favoring recreational use hold that watersheds and reservoirs should be so managed as to yield the maximum public benefit. It is suggested that the maximum benefit principle necessitates the multiple use of a reservoir if the different uses do not conflict irreconcilably."

This will be made a matter of the record. I am going to skip the next question which explains the four types of reservoirs because I am certainly sure you are aware of that. Now I am going on.

From the Bureau of Sanitary Engineering, California State Department of Public Health:

"The need for recreation facilities has created strong pressures for the opening and making accessible of areas with recreational value -- among them watersheds and reservoirs from which water is drawn for domestic purposes. Such water is obtained from reservoirs of several different kinds, the four most important are described here.

(1) First are reservoirs constructed, owned and operated by a domestic water purveyor and used soley or principally for domestic water supply. There are approximately fifty reservoirs in this first category, about twenty-five of which are now also open for limited recreation. This category of reservoirs may be divided into two sub-groupings 'upper reservoirs' and 'terminal reservoirs'. An upper reservoir

may be defined as an impounding reservoir from which water is carried either by pipe or open stream to a lower terminal reservoir. A terminal reservoir may be defined as one from which water is drawn directly into a treatment works and thence to the water distribution system.

(2) Another group of reservoirs are those constructed for multiple use, but from which a portion of the water is withdrawn for domestic purposes. Other uses of water from such reservoirs include power development and irrigation. In this category there are now only about seven major reservoirs, such as Shasta and Folsom. As the California Water Plan is developed, many more reservoirs of this type will be constructed.

(3) Impoundments in the High Sierra country, which were developed principally for hydroelectric power, form a third category of reservoirs. Water from these reservoirs normally follows a circuitous path from one impoundment to another, flowing generally in natural stream channels and ultimately reaching various terminal

reservoirs from which water is taken for domestic use. There are approximately forty or fifty reservoirs in this category. Lakes Huntington, Edison, Florence and Shaver -- examples.

4. A fourth type of reservoir is the natural lake, which may or may not have a minor regulating dam -- Tahoe is an example."

With a few exceptions, such as Cachuma Reservoir, the restrictions on recreational activity with which we are concerned in this report is related to reservoirs in the first category.

The Bureau of Public Administration of the University of California carried out a study to determine the practices and opinions in different California areas where some kind of recreational use is permitted in connection with reservoirs supplying water for domestic use. The following is the result of this correspondence, plus additional information gained from other sources. Be reminded, however, that the report was issued in 1957 (five years ago), and to save time and typing, we will give the summary only.

(1) <u>The City of Los Angeles and the City of San Francisco</u> follow parallel practices. Both permit limited recreation on mountainous

reservoirs far distant from the metropolitan areas where the water is finally used. Recreation is absolutely prohibited on local reservoirs in the vicinity of the metropolitan areas. Neither system provides for water filtration.

(2) Limited recreation is permitted on Cachuma Reservoir in Santa Barbara County. A system of health safeguards and policing is administered by the county. Most if not all of the water from Cachuma Reservoir is given dual chlorination before reaching the consumer. Users within the City of Santa Barbara receive fully treated water. Although official opinion regarding recreation on Cachuma appears to be generally favorable to the practice, it is not unanimously so. That, I might add, is the same situation unanimously existing today.

(3) For more than forty years, the City of San Diego has permitted limited recreation on its water supply reservoirs. All San Diego's water is filtered before reaching the consumer. Official opinion appears to be unanimously in favor of the San Diego local

policy.

(4) El Dorado County reports that the recreational use of water supplies is under control so far but also indicates that this problem is one of the most serious that the county has to face. "(Judging from) the water sampling program, the non-treated water reservoir has given us very fine results. However, public health-wise these supplies will be, or have been, chlorination is a standard procedure..."

(5) Until now there have been no domestic water supply reservoirs in Los Angeles County on which recreational uses are permitted. Tentative arrangements have been made to open one reservoir under safeguards outlined by the State Department of Public Health. Now, this is a note I put in more up to date. (Note: Littlerock Reservoir owned by the Palmdale Irrigation District had been opened for limited recreation prior to the time the County of Los Angeles negotiated to take water for domestic purposes. Since 1957, this contract was negotiated and safeguards were put into effect, but recreational use has

continued.)

(6) Two public water districts in Marin County permit limited recreation on their reservoirs. The water is chlorinated before delivery. Established safeguards appear to be considered adequate by local health authorities. Fishing and boating are permitted.

(7) Fishing is permitted at Los Padres Dam and on San Clemente Lake in Monterey County. The water is filtered and treated before domestic use. The county health department considers additional health safeguards to be necessary but reports no undue public health problems in recent years.

(8) In Napa County only one reservoir is opened to limited recreation -- Lake Hennessy, owned by the City of Napa. The water is chlorinated before use. Although the county health officer reports no health problems in recent years, certain Napa City officials object to the dual usage of the reservoir. I might note that this same situation exists today.

(9) A section of one domestic water

supply in San Luis Obispo County -- Lake Margarita -- is being prepared for limited recreational use under a scheme of health safeguards worked out jointly by the county and the state. All the water drawn from the lake is filtered and chlorinated before use.

(10) Boating and fishing are permitted on Lake Bidwell in Plumas County, which is also a source for domestic water. The water is chlorinated before use. The water company reports that serious problems arose several years ago as a result of recreational uses, but states that these problems were solved by arrangements for policing and water chlorination.

(11) Recreation is permitted on two lakes in the interrelated water supply system of the Vista Irrigation District and the Escondido Mutual Water Company. The water is chlorinated before going to the consumer. Neither agency reports any special problems caused by recreational uses of water supplies.

(12) Until 1957, reservoirs and watershed areas of the East Bay Municipal Utility District have been closed to all

recreational uses. Recently the district has announced plans to open Pardee Reservoir to fishing. District officers indicate their continued opposition to the opening of any of the terminal reservoirs located in the San Francisco Bay Area. (Note: Pardee is open for recreation, and the company reports no major problems.)

(13) In 1956, the State Department of Public Health surveyed California's reservoirs devoted to recreational as well as domestic use and found conditions on some of them good; on others, not so good. Based on this survey, a set of conclusions and recommendations were prepared emphasizing the need for (a) convenient and acceptable sanitary facilities, (b) a conscientious and vigorous program of supervision and patrol, and (c) an effective educational program, as well as adequate treatment of water.

In summary, the fight to gain recreational use of impounded waters is in a sense simply another of those issues arising from the need to utilize limited natural resources to the fullest extent possible. The concept of "multiple use" has been developed which calls for putting

any single resource to as many constructive uses as possible. In certain situations, it is relatively easy to reconcile two or more specific uses of a resource; in other situations, it may be difficult.

So far, from the studies made and reports rendered, it is obvious that the interest of the swimmer recreationists is not compatible with the interest of the water consumer.

There has been no consideration given to allowing water skiing on reservoirs providing a regular water skiing suit is worn by the skier.

The sports of sailing, canoeing and row-boating lend no body contact nor known contamination to water, and many now closed reservoirs could be utilized for these sports.

Motor-boating has two possible beneficial uses to a reservoir. The first is aeration. As aeration is used to add oxygen to the water and to remove carbon dioxide, hydrogen, sulfide and other taste-producing gases and vapors, the motorboat's propellers seem to have the multiple use of providing pleasure for the owners and aeration to the water. Secondly, the headache of evaporation is ever-present at our California reservoirs. Kerosene has long been used as the cheapest and best monomolecular film for reducing evaporation. To the

argument that the oil from the outboards would create taste problems, we are to remember that oil floats, is a monomolecular film, and the water is most generally drawn from the bottom of the reservoir -- not the top. Thus it appears that the oil film would have no harmful effect on the water, but rather a beneficial aid to help reduce evaporation.

Fishing appears to be possible on some of the now closed reservoirs, depending on a number of factors inclusive of distance from confine to distribution, treatment and chlorination.

Picnicking is certainly possible at the most of the reservoirs, providing safeguards are incorporated. Camping, likewise, could be allowed on a number of the watershed areas.

Toilet facilities always seem to be a great problem. I cannot understand why the United States is so backward in adopting the trailer-type facility now used extensively abroad. It resembles a large house trailer, houses comfortable and well-ventilated units, and when in need of servicing, it is simply hauled to the proper sewer outlet, flushed out with hoses, cleaned, and again put into service at the location of need.

I fully agree that there should be an agency of the state, designated by the legislature, to act as a

negotiating and also a control agent between the public recreationalists and the local water control agency, other than the State Department of Public Health. I believe the people would be served to a better degree in that such an agency could, by request of the legislature, make a study of the "multiple use" potential of a particular reservoir, costs of proper administration, recommend types of recreation possible without undue expense to the local water purveyor and include the recommendations of the State Department of Public Health. This would be cooperation to the local agency responsible to the people of the particular district. If such a study indicated recreational use was not compatible, or that a conflict could not be reconciled, or that the expense involved could not be tolereated for the benefits of recreational use, I feel sure that the public would accept such a report, and I am sure the legislature would.

Since other types of cooperation have been slow materializing, it appears there is not much else we can do -- unless public pressure builds to the point of forcing reservoirs open for multiple use. I do not feel this is good judgment, and I am positive that if we all work toward a solution, a solution will materialize.

I attached a letter here asking that this same type hearing be held in Los Angeles and Northern

California, and if there was a problem in the two hearings, that we suggest that the Los Angeles hearing be given priority.

SENATOR STURGEON: I have discussed that with Senator Thompson. He has agreed that the subject is of a magnitude that a hearing in each place would be desirable, and those will be held. I again suggest some time in the fall, September, October, November, along in there.

Are there questions from the committee?

SENATOR THOMPSON: No questions.

SENATOR QUICK: No questions.

SENATOR STURGEON: Mrs. Porter?

MRS. PORTER: Maybe Mrs. Mower can answer this: Would you have any suggestions as to funding recreational development on facilities in impounded water areas?

MRS. MOWER: Yes, I have some as far as I speak only for boating in this particular thing. I don't mean to indicate that we are going to pay for everybody else's programs.

We now pay a two cent boat fuel tax. We figure this must be around five to five and one-half million dollars annually going into the state general fund which is basically used for highway construction. We feel that this money should be used for boating needs, simply the

same theory that the highway user's money is used for highway needs. This is a possible source of money. I am a little discouraged to hear counties say they don't have any money because they charge us a personal property tax on our boats which goes to their general fund, and we don't get anything back from that normally. A few counties give a minor amount of patrol.

In the case of Marin County, I can truthfully state that they collected in excess of one hundred sixty-seven thousand dollars last year from the boats, and they admitted they spent not dime one for boating. There is a possible source of maybe a half and a half combination where the state might put up fifty percent and the county put up fifty percent. We would like to see them use some of this money for developing these things.

We have legislation passed which authorizes grants for launching facilities which could be used on the reservoirs. That is all.

SENATOR STURGEON: Thank you very much, Mrs. Mower.

MRS. MOWER: Thank you.

SENATOR STURGEON: California Waterways Recreation Association.

MR. MERLIN CARPENTER: Senator, I might state that in the interest of time, if you prefer, I would

forego the giving of this verbally and file it with the committee for their record.

SENATOR STURGEON: I promised Mr. Kogan that I would let him speak at four o'clock, so I think we are going to come out even. So I think you can go ahead and make your presentation. Will it take more than fifteen minutes?

MR. CARPENTER: No. My name is Merlin Carpenter, and I reside in the City of San Luis Obispo. I am appearing as one of possibly three speakers on behalf of the California Waterways Recreation, Incorporated.

The word "recreation" is hard to specifically define. To each of us, recreation very possibly means different things. To one person, it may mean spending time on the golf course, and yet to another, possibly the painting of a picture. To all of us, however, recreation is refreshment of strength and spirit, or a mode of diversion.

I believe that there is little doubt that the form of recreation participated in by the most people is simply that of going for an automobile ride. This form of recreation is enjoyed by all ages of persons and has the benefit of fresh air, sunshine and relaxation.

The number two spot in recreation, according

to the several articles I have read, is that form or type which associates itself with water -- those forms of recreation in which water is the magnet that draws the people. Some forty-four percent of the American people today prefer water-based recreation activities over any other forms of outdoor recreation. Recreation on the water is increasing faster than most land-based recreation activities, and the trend is likely to continue for the next forty years. Studies indicate that by the year 2000, swimming will be the most popular single outdoor recreational activity. The statements made in this paragraph of this presentation are among the findings recently sent to Congress and the President by the Outdoor Recreation Resources Commission. The commission's studies show that about ninety percent of all Americans eighteen and over participated in some form of outdoor recreation in the summer of 1960. In total, these participants engaged in one outdoor activity or another on 4.4 billion occasions. It is anticipated that by 1976, the total will increase by about sixty percent, with a three-fold increase by the turn of the century.

We are pleased that the State of California also recognizes that in recreation, we can find health, both mental and physical. Under the direction of a committee of eight state department heads, a staff worked

to develop the California Public Outdoor Recreation Plan. We are impressed with their comprehension of the problems of major land-use philosophies, competitive demands for land and water and the problems of the burgeoning recreation needs of the public.

We realize that domestic and irrigation uses of water must have priority. But we also feel that recreational uses of water where it does not interfere with priority uses should be encouraged.

A major part of the work in developing the California Public Outdoor Recreation Plan was the charting of trends in recreational needs. Forecasting recreation habits in the future was done by an analysis of the trends in population, mobility, income and leisure time. A few of the salient trends, for example, are:

Recreational travel: tripled between 1950 and 1960 and will triple again by 1980.

Picnicking units now number about 58,000 and by 1980 there will be needed 150,000.

Camping is now participated in at the rate of 900 camper-days per 1,000 persons and by 1980 will be 1,500.

Swimming demand indicates that by 1980 more than three times the present usable shoreline will be necessary. Today's shortage is

35 percent.

Boating has been and will continue to be a "booming" form of outdoor recreation. There are now 300,000 pleasure boats which is three times the number in use five years ago. By 1980 there will be a shortage of surface acres and access units (facility serving 125 boats). There are 1,925 units, and by 1980 there should be 8,900 units.

Fishing has doubled since 1940.

Perhaps the most significant conclusion drawn by these figures is that while we know now that demands for recreation on our waters are intense, actually we haven't seen anything yet! The California Public Outdoor Recreation Plan states that by 1980, the requirements for water-associated recreation will show an increase of 396 percent.

In making reference to a report presented by Supervisor Warren M. Dorn to the Board of Supervisors, County of Los Angeles, on May 6, 1958, the following statement is made: "When the great pattern of nature was evolved which created the present geology of Southern California, there were very few natural lakes created. Practically all of the fresh water bodies in our

southland have been constructed by man solely for the purpose of impoundment of water to provide agriculatural wealth and to sustain a large population of people. Some of these man-made bodies of water were constructed for private enjoyment, some were constructed solely for storage of domestic water, and many were constructed for storage of water for flood control and irrigation, with recreational use not even considered, or, if considered, was only of secondary importance." The report continues, "Possibly the greatest single potential of water bodies which could be converted to restricted public recreational use are the domestic water storage reservoirs . . . it has been demonstrated by other public agencies who have made their domestic water reservoirs available for public use that such practice on a limited basis is not in conflict with the primary function of the reservoir."

Exeellent examples of the dual use of reservoirs for the storage of domestic water and to provide recreational use of the lake surface is most noteworthy, particularly in a semi-arid region where natural lakes are lacking and where use of man-made domestic water storage reservoirs are provided. The Palmdale Reservoir is a prime example, as is Cachuma and the well known outstanding example of multiple use of

reservoirs under the control of the City of San Diego.

An analysis of surface acres of water available for fishing, public and private, indicates that there exists a gross deficiency of public waters in Southern California where men, women and children can enjoy fishing near home. Quantitative figures graphically illustrate the lack of early planning for public use of reservoir bodies so as to provide for multiple use of lakes, particularly for boating and fishing, instead of only a single use such as storage of water for flood control or domestic purposes. It behooves us then to re-examine the policies of governmental bodies who have such areas under their jurisdiction and work toward securing their acquiescence of the proposal to make these areas available for public recreational use according to well-planned and easily enforced rules and regulations.

The need for recreation facilities exists because of greater participation in sports due to more leisure time available and the inevitable increase in population. Our desire is to see that all impounded waters are used to their fullest extent compatible with the eventual use such water is to be put to.

Other individuals presenting testimony before this committee today will certainly indicate to you that

impounded waters for domestic use can be used for multiple purposes, and that proper filtration and purification removes major dangers to health. Also, that very possibly, multiple use can be given to many of these lakes on a calculated risk basis in which the benefits of recreation as a health measure are compatible with a pure water supply as a health measure.

It would seem desirable that when an application for a permit is requested by any public body for the building of dams to impound water for whatever purpose, that recreation must be included as a part of the study of such impounding of waters, and that when such application is approved, that recreational use of such waters consistent with maintaining water quality be a condition of such permit. There are far too many bodies of water today (such as Twitchel Dam in Santa Barbara County near Santa Maria) where waters are impounded for future release to replenish the underground water supply, and the public is barred from use of such waters. No recreational activity of any type, no boating, no fishing, no nothing, is permitted on Twitchel Dam.

We trust that this committee after due deliberation will see fit to recommend to the full Senate Committee on Public Health and Safety that legislation be

introduced which will demand that recreation be a part of all impounded waters for whatever reason such dam exists or may be built, and that such recreation be provided consistent with rules and regulations which will give necessary protection to the ultimate users of such waters.

SENATOR STURGEON: Thank you, Mr. Carpenter.

Questions from the committee?

SENATOR THOMPSON: No question, Mr. Chairman.

SENATOR QUICK: No.

SENATOR STURGEON: Staff?

Thank you very much.

Mrs. Holmes. A housewife should be heard in any hearing, and this is our housewife for the day.

MRS. MURIEL HOLMES: I am Mrs. Muriel Holmes, a member of the California Waterways Recreational Association, one of those people who are having had fingers pointed at today, one of those fishermen.

I would like to thank you for allowing me to submit material at this hearing, which I hope will be of assistance to you.

In this report, I will present excerpts from a reported dated March 2, 1962, compiled by the Department of Water and Power, City of Los Angeles.

Although this report resulted in the Board of

Water and Power Commissioners of Los Angeles denying the recreational use of Chatsworth Lake Reservoir, I believe that the reasoning embodied in the report may assist in providing a logical approach to the recreational use of waterways, based upon factual information and not future possibilities of epidemics or hearsay.

At the regular meeting of the Board of Water and Power Commissioners of the City of Los Angeles held on Tuesday, December 12, 1961, management of the Department of Water and Power was instructed to review a transcript of the minutes of the board meeting pertaining to recreational use of Chatsworth Reservoir, to investigate the facts relating to such recreational uses and to report the evaluation and supporting facts back to the board.

The management of the department considered the likely or possible influence on water quality in Chatsworth Reservoir and on the health of consumers served by that reservoir if the area is open to recreational use. Management also investigated the practices of various utilities and agencies across our entire nation to determine the consistency of their position relating to recreational use of reservoir areas. Based on the above considerations and on the department's consistency with other utilities and agencies,

management of the department firmly recommended that no recreational use be permitted in the Chatsworth Reservoir area, including the water surface area and the adjacent land area.

Any discussion regarding reservoir recreational uses requires that a common meaning be understood for terms used. Mr. Derby went into those terms and the filtering. In this discussion, finished water will mean that water which, with chemical control of algae in the reservoir and with only a small dosage of chlorine at the reservoir outlet, is aesthetic and is safe for human consumption. Raw water will mean that water which has been exposed to contamination to such an extent that full treatment, including filtration, in addition to chlorination, is required before the water is aesthetic and safe for human comsumption.

Water can carry virus, bacteria and amoeba which are capable of causing disease in humans. Though a large percentage of these organisms will die after short exposure in surface water reservoirs, some of them will live for periods up to several months -- in some cases of some virus strains, perhaps even longer.

Sand filters are reasonably effective in removing bacteria and amoeba, but little is known about the ability of filters to retain virus. With a suitable

contact time, chlorination will kill bacteria, amoeba and virus.

In view of this, public health authorities prefer that a domestic water supply be protected from human exposure even at its origin. Lacking this, the raw water should be in surface storage for a period of approximately two months or should receive plant treatment consisting of at least pre-chlorination, flocculation, sedimentation, sand filtration and post-chlorination. This does not absolutely guarantee a safe water; it just gives reasonable assurance. (Of course, the air we breathe and the food we eat cannot be absolutely guaranteed to be safe either.)

Water delivered from such storage or from such a treatment plant would generally be considered a "finished water".

In referring to the national practice, the report states: In practically every facet of our society, we are required to compromise a personal desire in order to assure an equitable and harmonious relationship with other members of our population and even with nature itself. The water purveyors are not exception. Complete ownership of watersheds has been acquired by water purveyors in many areas where this was economically feasible and where the consumers valued their pure-water

source enough to pay the price for the land. In other locations, the water purveyors have had to compromise their desire for a pure source of water because uses for other purposes were of such high value they could not be ignored. The alternative, in this latter case, is to accept the cost and risk inherent in treating a "dirty water".

The general practice is to allow boating and fishing in controlled areas of raw water storage reservoirs. This is permitted on the basis that the water is already contaminated and will, due to existing conditions, require treatment. The risk of additional contamination is considered reasonable compared to the recreational values received. However, even though such water is almost always subjected to full treatment, the recreationists are restricted from the intake towers for a distance of one-fourth to one-half mile or more.

Finished water reservoirs present quite a different picture. There are no domestic water agencies, within the knowledge of the management, who allow recreational activity on their finished water reservoirs or on the grounds adjacent to the water area. Any such use would put the water back in the raw water classification and require its subsequent complete treatment. The California Administrative Code

(Section 7630) expressly forbids recreational use of distribution reservoirs. These are reservoirs "directly connected with the distribution system of the domestic water supply project, used primarily to care for fluctuations in demand which occur over short periods of from several hours to several days, or as a local storage in case of emergency ..." At this point in the domestic water system, the importance of safe and aesthetic water does not justify a compromise with recreational proponents.

A number of very brief statements and their sources are appended to the Los Angeles Department report. The references overwhelmingly support the recommended policy of the department, both in regard to basic fact and in regard to consistent practice with other domestic water purveyors across the nation.

After studying the report and other data on the matter, it is my considered opinion that raw water, in other words, that water which is exposed to contamination and will be treated through filtration and chlorination before human consumption, that raw water should be opened and maintained for recreational use.

Because of the tremendous increases in population throughout the State of California (10,000 persons per week, according to the United States Bureau of Census),

the planning for recreation must be accelerated along with all other planning to make certain that the recreational areas are sufficient.

The original contamination of water, food or air is a well-recognized condition. The problem man must face is not only how to eliminate as much of the contamination as possible, but how to protect himself against the results of such contamination.

SENATOR STURGEON: Thank you, Mrs. Holmes.

Questions from the committee? Staff?

Thank you very much.

I would like the record to show that Mr. Fred Kimbell was present here today observing both for the County of San Luis Obispo and also as President of the Feather River Association.

Mr. Bob Williams, did he come back?

MRS. PORTER: On my way out, I had two people stop me and say they would like very much to address themselves to the committee and express their appreciation. Would you like them to do that now?

SENATOR STURGEON: We would love to hear good words, but we don't want to hear any criticism.

MRS. PORTER: Mrs. Steelbar was one.

MRS. STEELBAR: I just want to thank the committee. I know it is tiresome and hard to sit, and it

is terribly monotonous at times, but you have just been wonderful listeners and brought out some wonderful points.

SENATOR STURGEON: Thank you very much.

SENATOR THOMPSON: Mr. Chairman, right at this point, I would like to say a word.

You know, down here in San Luis Obispo, you have a real good senator, and he arranged a real wonderful program. He did a real fine job, and he does a real fine job at everything he does.

SENATOR STURGEON: Thank you, too.

MRS. PORTER: There was somebody else who spoke to me. I don't know whether they are going to say anything or not. Somebody else said they wanted to say something.

VOICE: He isn't here yet.

SENATOR STURGEON: You can identify yourself to the reporter.and proceed in any way you would like.

MR. THOMAS HARRIS: Fine. May name is Tom Harris. I am a member of the California Waterways Recreation Association, and I represent our President, Mr. Bob Williams, who was unable to return in time due to his duties at the college.

Just before I get started here, I would like to thank the board assembled for the opportunity to appear here and stress a little more information from the

sportsmen's side of it. And I hope you will bear with the rather rough drafts, copies that we presented. It was done at the last minute, and I hope you will bear with us on that.

I hope, Mr. Chairman, if I may to save time, last-minute preparations did not permit having photostated copies of all of these references, but I can, nevertheless, make copies available to all members of the board.

SENATOR STURGEON: Would you, please? Fine.

MR. HARRIS: The first one I will quote from is a report tabled at meeting of the New Jersey Conservation Society, Annual Meeting of that Board in 1958, I believe.

(First reference presented.)

Chairman Sturgeon, members of the board and fellow sportsmen: I wish to express the gratitude of the association I represent (the CWRA) at being granted time at this vital hearing to present what we believe to be facts and information pertinent to the problem at hand. I don't intend to waste time by stressing the need for increased water-based recreational facilities in this state or the pressing need of new legislation and controls which the state agencies involved need so badly if they are to serve the recreation-minded citizens of this great state fairly. Your very presence here today in such a

capacity is proof enough of the state government's awareness of the situation . . . and for that, we are truly grateful because there needs be a completely new approach to recreational use of domestic water supply reservoirs. I say this not so much to slight the agencies involved with such operations now as to point out the fact that this is still a comparatively unexplored frontier. It's a new problem, and it has spawned its own special kind of nightmares to those who wish to harness its potential for the good of our citizens. Gentlemen and ladies, I'm not just referring to seven or eight artificial impoundments. Project yourselves another two decades into the future. Will our population have mushroomed to twenty-five million or more by then? It is a known fact that at the current population growth rate, this state is faced with the inevitability of having to impound nearly every fresh water source within its borders. That will happen just as sure as the sun will rise tomorrow morning. At least that is my theory. (And if that doesn't happen, I know you'll forgive my absence here.)

Some sportsmen take a dim view of losing one favorite trout stream after another, but they realize there is little choice in the matter. They don't want much in return, just a place to pitch a tent and dabble a

line in, a place to escape the gruelling pace and drudgery of our work-a-day world. These are his God-given rights and are further insured by the Constitution of this great county: to live as he pleases, to do as he wishes, as long as it endangers not the lives and well-being of others. The mountains, lakes, streams and rivers are his free domain and should remain so for his son and his son's son, et cetera, for all time.

The founders of this nation authored another incomparable piece for our well-being, that the accused is innocent until proven guilty. That may hold true in the eyes of the law, but the same cannot be said for society. The sportsmen have been accused, and in many places already found guilty in mock, mythical trials before the public, of contaminating and polluting drinking water supplies.

Several city, county and state public health officers, sanitation experts and water pollution men are guilty, I believe, of flagrant violation of their intended duties. In recent months, they have been authors of great fear and smear campaigns pelting the public with theoretical and hypothetical balderdash that has, nevertheless, served its purpose, that being to confuse the issue at hand, to stuff the bones of a family skeleton back in the closet and to hide the fact that recreational

use has been carried on at domestic water supplies the length and breadth of our nation, to varying degrees, for, in some cases, half a century.

Forgive me, sire, for being a little blunt and to the point, but the time is at hand for some intent soul-searching. This dissemination of false and slanted information on so vital an issue is a threat to our freedoms, and it is one of the major problems in need of quick and qualified solution. You are here to gather facts, and it is our intent to provide you with same, factual accounts of our findings, which we know can stand the light of complete investigation.

The facts, then, are these following experts from various governmental and scientific reports and sources. Based on recent figures, fishermen in this country spent well over two billion in one year of angling, and they drove over eight billion miles to do it. I believe this is in reference to the calendar year 1958. So all that money was spread around. Intensively managed waters can support more than one hundred fishing trips per acre per year. Even reducing the average daily expenditure to three dollars and ten cents per angler per acre per day, these waters have a potential to generate some three hundred and ten dollars of local business activity annually. At a four percent interest

rate over twenty-five years, each acre has an equivalent capitalized value of seven thousand seven hundred and fifty dollars to the local business community. To bring that closer to home, in other words, a lake such as Santa Margarita could mean, over twenty-five years, of a staggering five million eight hundred and twelve thousand five hundred dollars to its surrounding business communities. And that, Mr. Chairman, will be my one and only reference to Santa Margarita Lake, as per your request, something my predecessors were not able to do.

These statements are excerpts from a report to the annual meeting of the New Jersey Soil Conservation Society, January 28, 1959, by Richard H. Stroud, Executive Vice President of Sport Fishing Institute, Washington, D.C. Stroud further stated, "Technical arguments of this sort miss the point, in my opinion. The important fact is that over twenty-five million Americans of all ages deliberately choose to fish for sport as a matter of conscious preference." Later on in his report, Mr. Stroud, in speaking of recreation use of domestic water supplies, further said: "In many areas of the country, the high value to communities or regions of multiple use of water supplies for recreation, as well as for drinking water, is fully appreciated."

In this regard, one California State Director of Public Health stated (in a letter dated July 1, 1955, to the California State Director of Fish and Game) that, "There is not only a public interest, but a public health interest in wholesome outdoor recreation, as well as in the supply of safe and potable water for domestic purposes. Responsibility for permitting these activities on water supplies is now recognized by many progressive water departments as compatible with supplying safe, potable water and as also providing important public health benefits. Multiple use of municipal water supplies is now common practice. Only the most backward agencies still resist it."

It was my intention to quote further references from the conference at Richmond, but I believe that those remarks have been rehashed, and I will refrain from so-doing to get away from unnecessary redundancy.

I do have some photostatic copies here again which I will make available to the board. I will quote from, and the first one is in reading, from a report by Cecil E. Lincoln in regard to New York City's new reservoir lake, dated in July, 1953. We note that New York City passed a law nearly fifty years ago providing that fishing shall be permitted on any natural lake or

reservoir built by the City of New York for the purpose of water supply.

An excerpt from a recent article by Walter Frank in New Jersey Outdoors: "Sportsmen are saving the City of New Brunswick millions of dollars in police protection by patrolling the city's vast watershed, declared Thomas F. Boylan, Junior, head of the New Brunswick Water Department. New Brunswick would never be able to hire a force of guards as large and as intelligent as we now have by permitting public fishing on our watersheds, he explained. These fishermen, and I might add hunters, too, are doing a great public service in return for the privilege we are happy to grant in the multiple use of our watershed. They have proven to us beyond a shadow of a doubt that they themselves are far superior protectors of our water supply than a force of paid policemen or guards. By their unique patrol methods, they are safeguarding their own water supply from contamination. They enjoy the recreational values, and we of the department are grateful for their services.

"The city water department is often reminded that sportsmen want good fishing, and that they will do all in their power to protect the lakes and streams of the watershed from pollution. Hundreds of telephone calls are received in the department offices when the

slightest pollution becomes evident on the watershed. It may seem strange, but, in general, any indication of pollution will cause more reaction from the fishermen than the non-fishing water consumers of the area."

And, gentlemen, I suggest that the sporting and fishing public of California is no exception to this general rule.

SENATOR STURGEON: Thank you. Questions from the committee?

MR. HARRIS: I have a bit more. I will forego, in the essence of time -- As I said before, much of this has been covered before. I will carry on with the final portion of my presentation here.

These, gentlemen, are but a few of the facts we have gathered in support of recreational use of domestic water. There are thousands more in this particular item which I will make available to you, which, I think, contains some very basic and important truths in there.

Just one other item before summing up in regard to the recently-published report by our state health department on recreational use of domestic water supplies in our state. Several meetings have been held and some action already taken by our association to enlist the help of the governor himself to find out where, when and how this department obtained what we have found to be

such contrary evidence to the actual facts of the matter. I believe you ladies and gentlemen are all familiar with it. Never has there been such a negative, narrow-minded and sceptical report given on this topic. Hearsay, insinuation and innuendo have been substituted in many places for fact and proof. Yet the governor allotted twenty-five thousand dollars of taxpayers' money to get the truth. We appreciate our public health officers' concern of pure drinking water, but we would also appreciate more truth and less dramatic fiction in the protection of same. Even State Chief Dr. Merrill has had to make decision on nothing but hearsay and figments of some informer's imagination as he did recently on Santa Margarita Lake.

The problem of getting the true facts to the public is one of our most serious problems. I will quote you replies from five county health directors in this state, obtained only Monday by myself, while phoning those to be quoted. All five were asked if they had ever had proven contamination or pollution of domestic water supplies, resulting from recreational use thereof, and if so, what official action was taken and what was the result thereof.

In all five cases, and these were picked at random, the result was absolutely the same.

In talking with a Mr. E.H. Sunforth -- This

isn't part of the presentation that you have copies, but, again, I will have copies of these made available to you. -- who is the Assistant Director of Sanitation for the County of Ventura, I asked him the question forestated, specifically aimed at Casitas Reservoir, which is a very popular multiple use domestic water supply, and also Matilija and Santa Felicia. It was his reply that they had never had any problem with contamination or pollution because of recreational use of those lakes, and they had, though they kept a constant watch and a constant number of water purity tests, they never had at any time any problem because of recreational use.

The same answer, in effect, was given to me by Dr. James Nobel, the County Health Officer of Amador County. I asked him regarding Pardee Reservoir, and he said the same thing, that there had never been any trouble, no problems regarding contamination or pollution there. And we earlier heard from a member of the East Bay Water group of the activities taken part on Pardee Reservoir.

I then talked with Santa Barbara County, Assistant Director of Sanitation -- Pardon me. -- Director of Sanitation, Mr. Alfred Engel, asking him again the same question. He says there has never at any time been any traceable bacterial count because of recreational use.

He says a constant supply of bacterial count tests has always proven the bacterial counts in these waters to be of very high quality.

Then one, the fifth and final officer contacted, was in Quincy, California, a Mr. William Cullin, who is the Chief Sanitation Officer there, and it was in regards to another domestic water supply lake. This man has been the Chief Sanitation Officer in that county for nine years, and he gave me overflowing praise of all recreational use of that particular lake and said, "We have always appreciated the sportsmen's use of our lake, and we have never at any time had any trouble of the kind you mention."

Pardon me, that was the fourth.

The fifth was in Napa City, in Napa County, dealing with one reservoir and also with Lake Berryessa. That didn't apply in our specific case because it is a much, much larger lake, the second largest in the state, and I believe probably doesn't fall under the same set of controls and regulations as the smaller ones do. The same answer was obtained from Dr. Cook, who is the County Health Officer there. He said, as far as he knew, since he had taken over that position, there never had at any time been any reports proven or otherwise of contamination or pollution of their water supplies by

recreational use. That is the last of the five references I shall make to that.

Excerpts from Sports Fishing Institute, publication in Washington

"Annual report from City of San Diego (mentioned in California Fish and Game Department press release) states that the recreational use of the lakes (San Vincente, Lower Otay, Hodges and Morena Reservoirs) provided San Diego City with a net profit of $49,993.80."

Editorial in Western Outdoor News (June 10, 1955): "Not one instance of pollution or contamination has ever been unearthed. The only disease that ever resulted has been the highly contagious 'fishing fever'. That's one form of sickness sportsmen in the state could use more of," (referring to San Diego reservoirs).

Now, honorable board, can the view of state and county be so completely opposite?

Gentlemen, in closing, we wish to propose two major solutions to the thorny problem we are faced with. Firstly, be it resolved that this fact-finding board report back to the legislature they represent, requesting a six-man state-wide and state-appointed commission, including two each from public health and independent sportsmen's groups and one member each from the Fish and Game Department and the Department of Sanitation and

Pollution, to draft up and oversee regulations governing the use of domestic water supplies for recreational purposes; and, secondly, it is our fervent prayer that this committee carry back to Sacramento a strong and united wish that present legislation be altered to take the onus off the sportsmen. I mentioned earlier that we should be innocent until proven guilty. Let it be made law that all domestic water supplies are open to recreational use, under accepted proposals of the above-named commission, unless qualified experts present positive proof that same is being done at the expense of public health and safety.

We ask that, sirs, because no one is more concerned about pure, healthy, clean water, along with good fishing, boating and camping, than we are. We drink the water, too. Thank you.

Now, is there a question from the committee?

SENATOR STURGEON: Just have one observation: It seems that you have been reading Mrs. Mower's mail from your request there.

I express my appreciation to the City of San Luis Obispo through your Mayor Davidson, through the courtesies that you have extended through this committee here today, and, two, I hope you will carry back to Captain Black our thanks for the use of the Highway

Patrolman today for our sergeant-at-arms.

MR. IRVINE J. KOGAN: Mr. Chairman, Senators, thank you very much for the opportunity for the San Luis Obispo County Pure Water Association to appear before you.

I found it a little difficult to have the California Waterways represent the housewife. I noticed a few housewives here that are not members of the organization. As a matter of fact, I would suspect that they are in the majority.

Also, regarding the California Waterways Association, I appreciate their views. I sometimes find it hard to tell whether Mr. Williams is Chairman of the California Waterways Association or whether he is a concessionaire at Santa Margarita Lake, but this is the type of thing that we have to look at.

We are all trying to look at this thing from our point of view. I personally, having read this report by the State Health Department, having heard the conflicting testimony, I believe the members of our organization are more likely to accept the conclusions of the State Health Department because, for no other reason than perhaps they are not presenting a pocketbook version of this thing. They don't have the same thing at stake. Nevertheless, certainly, the testimony of these people is very valid. It is needed, and we just have to

look at it for what it is.

As far as our organization is concerned, we have people from medicine, biology, every day citizens concerned with pure and potable drinking water. Our purpose is to help the public become informed in this matter, certainly to become informed ourselves first to help the public become informed, certainly to take opportunities such as this to present what we feel is the public viewpoint on this matter, recreationists, as well as the boat recreationists, help the public's viewpoint be presented from an organized group, and, finally, to take the initiative in acting if public action is necessary in order to see that the public's interests are protected.

I would say that we have four concerns, four major concerns: First of all, the situation at Santa Margarita Lake; secondly, the stand of the State Health Department regarding Title 17; three, the current tendency of legislation to favor the recreationist; and, four, concern that this whole thing be put in perspective as to where the responsibility of public officials lie, where the responsibility lies as far as the public is concerned.

Regarding the first matter at Santa Margarita Lake, I imagine this has been dealt on quite adequately

here today. We don't feel that the county officials should be in a special position, in spite of recommendations of the State Health Department, the county health officer, the pleadings of the water purveyor, the City of San Luis Obispo, go ahead with their plans for overnight camping and go ahead with the refusal to consider any further health safeguards at Santa Margarita Lake. We feel that certainly your group, by 1963, can consider some legislation which would take our county board of supervisors out of this special position.

Regarding the second matter of Title 17. This is a regulation. We have lots of regulations. Some of them are very difficult to enforce. Sometimes the enforcement action, lack of enforcement, doesn't bring serious injury, doesn't cause a great deal of harm; sometimes it does. But enforcement of an act such as Title 17 is at best difficult. Now, the State Health Department at the previous meeting here indicated that they are very understaffed and they find it very difficult to make adequate surveys at these various lakes. And yet we know that this business of pure, potable drinking water is one of the most vital ones to our every day existence. We feel that perhaps the State Health Department, acting under diress in 1955 when the legislature was about to turn over these reservoirs for recreation, and according

to the understanding we have, under the, because of the pleadings of the Health Department, the governor vetoed the bill, the State Health Department came up with the act, Title 17. Perhaps they were rolling with the punch. Perhaps Title 17 can't do the job. Certainly, it is very difficult to control the fishermen full of beer in the middle of a lake with no patrol boat far from shore, difficult to control his actions. This isn't every fisherman, but this is a fisherman. Certainly, the problem of virus is a new one and offers a great deal to be studied. Certainly, five or ten years ago, we certainly didn't know about -- the things about cigarettes that we do today, even though all the facts aren't in. Regarding Title 17 then, we have the report by the State Health Department, a list of numerous and serious abuses at all of these locations. So we are in doubt as to whether Title 17 is strong enough. We wonder if your group doesn't need to look at this legislation again and see how it can be tightened up. And then after it is tightened up, whether it is still effective, and if it isn't effective, whether we have to close these lakes altogether to protect the public.

Regarding the third matter of legislation in favor of the recreationist and, I should say, boat recreationist: It seems that legislation is such now that

either the county, the county can enforce the local agency to initiate a plan to open a lake, and unless they go along with this plan, they -- either they go along with this plan or they can, in the last resort, bring the public in to determine whether the lake should be opened for recreation, but the public is the last one to get the opportunity to speak here, and yet these recreation people, boat recreation people, are very vocal. They have exerted a great deal of pressure. We felt it in our county. We feel they have a right to present their views; nevertheless, this pressure has been tremendous, and we feel that the people need more of a voice in this matter. We feel that perhaps the people in the smallest municipal district where the drinking water is used should first of all be given an opportunity to determine whether they want recreation on this reservoir. If they do, why, certainly they can have it and under the controls that are set up. Leave it be then for the recreationist to initiate the referendum or to start the initiative that will place this reservoir, open these water supply reservoirs for recreation. Let it be for the public that is going to use this water for drinking purposes decide whether they want this recreation.

Now, trying to put this thing in perspective, I have been talking about the public, and I have been

talking about the boat recreationists, and from some of the testimony here, it seems that perhaps the public is a minority and the boat recreationist is almost a majority when you start totaling up these statistics. But I would like to cite Santa Margarita Lake only as an example for statistics. At Santa Margarita Lake, there are approximately twelve thousand water using days -- I am sorry. -- twelve thousand recreation days per year. On the other hand, there are twelve million water using days per year at Santa Margarita Lake. That is, people drinking water from this lake, twelve million water using days, a ratio of one thousand to one. One thousand to one. Now, when I define a recreation day at Santa Margarita Lake, I am talking about the person in the boat that goes onto that lake for one day and leaves that lake. This is one recreation day per year, and there are twelve thousand of those approximately. Approximately two hundred people a week on an average attend the lake under these circumstances. On the other hand, there are twenty-two thousand people in the City of San Luis Obispo, there is a college, there is a men's colony. All of these people use this lake for water drinking purposes three hundred sixty-five days a year, close to thirty thousand people, twelve million water using days, drinking water using days. So we have here this ratio of one

thousand to one. I personally consider that one day of drinking water out of that lake is equivalent to one day of riding a boat on that lake. One thousand to one. Now, certainly this one person needs their rights taken care of. Recreation is a necessity. But I can't see sacrificing these one thousand people here for this one person here so that they can have special privileges regardless of how vocal this group may be. Thank you, sir.

SENATOR THOMPSON: I would like to ask this question: Are you opposed to the use of fluoridation in water?

MR. KOGAN: Fluoridation?

SENATOR THOMPSON: Yes.

MR. KOGAN: I would say that, in speaking for the committee, our committee has not discussed this aspect, if this is an aspect of the problem. However, I personally am not opposed to fluoridation of the water.

SENATOR THOMPSON: Thank you.

MR. KOGAN: We do have, if the committee so desires, an expert here in biology who has done some water pollution research, and if the committee wishes to question either myself or him, why, I would be glad to answer any questions.

SENATOR STURGEON: Any questions?

SENATOR QUICK: No.

SENATOR STURGEON: Would you like to?

SENATOR THOMPSON: No more.

SENATOR STURGEON: Staff?

Thank you very much.

That completes the agenda that I have here unless I have missed somebody who requested to be put on the agenda and was inadvertently left off.

MRS. PORTER: Senator, Mr. Bob Williams would like to say something.

SENATOR STURGEON: All right. I see you are back.

MR. BOB WILLIAMS: My name is Bob Williams. I am the President of the Waterways Association. I would like at this time to personally thank each and every one of the members, the Senators, the staff that have taken their time to come here and these people that have so patiently sat in the audience and all those that have participated in this fact-finding committee hearing as it is our hope and our intent that we can establish a relatively good, adequate working program for recreation and a safe water supply. It is unfortunate that personalities are brought in in specific cases; however, I wish at this time to thank you very much for your time and effort in this program. Thank you.

SENATOR STURGEON: Thank you very much, Mr. Williams.

Is there anybody else that has not been scheduled and would like to be heard from?

MR. FRANK PHAFF: I was supposed to have been scheduled. I sent a card in a long time ago, but I was overlooked.

SENATOR STURGEON: It must have been, and I apologize.

MR. FRANK PHAFF: My name is Frank Phaff, P-h-a-f-f, Junior.

SENATOR STURGEON: Your name is on my list laying on my desk. I am sorry.

MR. PHAFF: First of all, you will have to excuse me. I didn't know I was going to be able to speak or not because I wasn't notified until late yesterday afternoon. The thing mostly I was going to bring up is that San Luis Obispo, the city itself, is only entitled to three thousand acre feet of water per year maximum. Practically all the speakers acted and presented as if Santa Margarita Lake is their only water supply, which is incorrect because the college itself uses three thousand acre feet of water themselves per year.. It was stated by our County Health Officer that, about contamination from human beings, but in the

December meeting at Santa Margarita High School, the U.S. health officer, the state health officer, stated that to their knowledge at that time, there was no contamination from human or animal waste. But, since then, the county health officer said he had proof of it.

But, first, I know there is no proof because the U.S. Health Department still states the same facts.

You will have to excuse me. I was in a serious automobile accident, and kind of not being prepared, I get kind of upset, but I will do the best I can.

SENATOR STURGEON: Don't feel bad about that.

MR. PHAFF: It was also stated, and it was admitted, that the filtration plant they have here is not large enough, and it would be two or three years before it will be large enough to supply the people in San Luis Obispo City. Now, the plant that they have now was built for six thousand population. Since then, the population has gone to almost twenty-four thousand people, which is almost four times higher than it was.

I would also like to state, there was remarks about contamination of the water up at the lake, but I made the rounds with some friends of mine up into the reservoir canyon, close to the wells, and there was rubbish close to the water supply. I believe that also

while we was on this tour, we brought jars along and took water up at the pumping plant, came from the lake, and it was clear, except for a little moss that was in it. We came down and got water from one of their wells, and it was just like mud. And in the fall, as all of you know, the water level was low. Instead of digging deeper to get clear water, they were getting water close to the surface and getting nothing but mud. And it was all blamed onto the lake, which I don't think is right.

What I wanted to tell you also, Senator, Mr. Skinner of the Los Angeles Water and Power said that Lake Paris, close to Los Angeles, was a storage for their water supply and was not filtrated and was pumped in directly. He forgot to admit that they allow fishing at Lake Paris.

Also, he wanted to know about the Sacramento River, if they were still dumping sewage and pumping water directly from the river. I was up there a few months ago, and, if you take the road up on the Vallejo side, there is a town that is dumping into there, and there is another town pumping directly out. They are small towns. It was said that the Sacramento River did have a lot more -- I know of three cases along there.

Also, your United States Land Office states that after water runs over rock and sand and gravel, it purifies itself, or if it goes through large pipes, which

it does, to get over the grade, and in pumping, and the pumps aerates the water so the water should be pure. Water really should be tested right at the pump and then tested after it comes out of the filtration plant, and then put the blame where it really should be.

Also, you was wondering about those rocks in Los Angeles. Well, when I was a little boy, they had just put them in a short time before, and my father was well-known there, and we made the tour of Chatsworth, Silver Lake and all other reservoirs there, and that was put in there at that time, which was about forty years ago, for purifying the water. At that time, that was their only means of purifying the water. That is actually rocks and cement that it goes over. That is what you saw coming down there so fast. You wanted to know about that.

Now, there was a statement that the Colorado River water and Lake Mead, Lake Havasu water, is much purer than the water they are getting from their own water sources from the Los Angeles Water Department. Now, from Lake Mead directly, as well as Lake Havasu and the Colorado River, water is pumped out of there and used for human consumption, and they still have body contact, boating and fishing.

If I would have known ahead of time, I would have had this all written out and might have saved some

time on it. I will see if I got a few other notes that I took down here.

Another thing, what I would like to know is: Why they quit using the Laguna Lake water and have less wells in the City of San Luis Obispo now than they did before they got the water from the lake?

Also, part of the lake was sold by the city to the Laguna Developing Company, and it is a housing project now.

At another hearing, I asked Dr. -- well, the county health officer, about hepatitis. He said he had several proofs in the United States and in foreign countries. I asked him about his proof, and I asked him where it was, and the only proof he came up with was in Pakistan in 1923. I don't think Pakistan should be a very good example, even to the present date. They still bathe their children, wash their clothes in it, and their animals are walking in the water.

Actually, the water being pumped up the terrestrial grade and back down again goes against the principles and the rules of the United States Government because I was going to buy a ranch, and if I put in a dam, I could not pump back one mile to my home from the lake, but I could put a well in because I would have to release so much water to the ranchers below me. I think

your governmental bodies should abide by that same rule. And on a drought season, I would have to release at least fifty percent of my water from the reservoir, regardless if we had rain or not in order to supply them with water.

I would like to know for sure just exactly how much water San Luis Obispo City got last year in our drought season. According to the master agreement, they are only entitled to the maximum of three thousand acre feet of water, and the minimum is the natural flow into the lake at that year. I have been trying to get that information, and so far, I have been not able to. I go from one place to another place. It is one of these times I might run into the right one.

Actually, we could have a solution to this water problem in this county if the county supervisors would become purveyors of the water and sell it to the San Luis Obispo City at a higher price than twenty-three dollars per one hundred feet of water, which is -- doesn't even pay for the pumping hardly.

SENATOR THOMPSON: For one hundred acre feet of water?

MR. PHAFF: Twenty-three dollars.

SENATOR THOMPSON: For one hundred --

SENATOR STURGEON: That is per acre feet.

MR. PHAFF: Per acre feet.

SENATOR THOMPSON: One hundred acre feet?

SENATOR STURGEON: That would be one acre foot, Jack.

SENATOR THOMPSON: For twenty-three dollars?

MR. PHAFF: And your average in the United States is thirty-five dollars. What I thought would be a solution that would, the raise in the rate of the water, we could have a twenty-four hour patrol, plus having it Bluestoned the way it is supposed to be, and it would clear up the water, and they would have very potable water for everyone that uses it.

Mr. Paris made the statement here, I would like to bring out, that fish contaminate the water to a certain extent. The U.S. Government pamphlet says that if you put, make a reservoir, be sure and put fish in the water because they eat the bacteria and the algae, and you don't have to treat the weeds so much.

SENATOR STURGEON: My dream is coming back to life.

MR. PHAFF: That's my speech, and I want to thank each and every one here present for coming. Thank you much.

SENATOR STURGEON: Questions?

SENATOR THOMPSON: Yes. What is the capacity of the Santa Margarita Lake?

MR. PHAFF: I do not know the actual capacity.

SENATOR STURGEON: I believe it is twenty-four thousand feet, is that correct?

SENATOR THOMPSON: Twenty-four thousand acre feet.

MR. PHAFF: And the City of San Luis Obispo, under the agreement, are entitled to three thousand acre feet. That is the maximum.

SENATOR THOMPSON: Yes. I figured along the lines somewhere that they would use fifteen hundred, and I was figuring what we used in San Jose, which I happen to know, that they would use about half of that amount.

SENATOR STURGEON: Senator Thompson, I should explain, I think, while this is not a subject that this committee, I think, should properly handle, --

SENATOR THOMPSON: No.

SENATOR STURGEON: -- these water rights are a matter of legality. They are a matter of establishing right, and they were set by the Water Rights Board, and I think that these are, at this point, incontestable.

I believe that San Luis Obispo has so-called proved-up their rights, and the right to use this water is -- it is already determined.

MR. PHAFF: It is determined by the United States Government.

SENATOR STURGEON: So far, as the matter of pumping it from one watershed to another, under California law, I believe, that all water is regulated by state law through the United States. I am not sure of that point, but under California law, this water can be pumped from any place to any place. If we could show need for some water that was surplus from Senator Quick's County of Imperial, and if we could show the Water Rights Board that we can economically deliver that water to the people in San Luis Obispo, they would give us that water.

Now, any water that is surplus is -- it is up for grabs. We have experience of having some of this grabbed out from under our nose in many times more acre feet than what is in Santa Margarita Lake. But to make a flat statement, I don't think the subject of water rights is germane to this hearing.

MR. PHAFF: I didn't mean it. I just wanted to bring it out according to your own personal reservoirs, that it would be to that effect.

SENATOR THOMPSON: The control of the water, what agency owned it, would prohibit certain restrictions?

SENATOR STURGEON: This is a complicated matter, too. The United States Army owns the dam. The people of the State of California own the water. The

County of San Luis Obispo is the delivering agency, wholesale, and the City of San Luis Obispo is the purveyor.

Am I correct in that rundown?

MR. PHAFF: That is the way it is now. That is why I suggested the change to have the supervisors be the purveyors and supply the water and see that the water is pure when it leaves the lake.

SENATOR STURGEON: I would add one more group in there, the Department of Public Health can regulate the County of San Luis Obispo in their delivery of water, but they cannot regulate the County of San Luis Obispo in their storage of water.

MR. PHAFF: There is one other thing, Senator, I would like to bring out. In last night's San Luis Obispo paper, Whale Rock, which is owned by San Luis Obispo City and the state, it was stated in there already that the city officials are not going to allow any kind of recreation on it. They are going to put a fence around it, and they have got a patrol boat on the lake already and going to patrol it by shore. Now, I heard several statements made at this hearing that all these new ones, since a certain date, was supposed to have allowed for that.

SENATOR STURGEON: I will explain that, too.

San Luis Obispo is a chartered city, and under the Constitution of the State of California, even the legislature cannot deny the City of San Luis Obispo to the right to do exactly what they are proposing to do. The only people who can change that are the people who are affected by that charter, the people who live within the City of San Luis Obispo and vote here.

MR. PHAFF: What is the people in Cayucos going to do if they all of a sudden start having sudden growth and have industries go in there with the dam and water taken right from under their nose?

SENATOR STURGEON: They have a separate agreement with the City of San Luis Obispo, I believe.

MR. PHAFF: Thank you again.

SENATOR STURGEON: Any other questions?

With that, I think we should conclude our hearing for today, and any rebuttal that anybody would care to make, you have several months to prepare it, and anybody who would care to be placed on the mailing list to be notified of the next hearing --

Will you give me your address, Della?

This is the first time I have ever asked her for it.

DELLA BRADFIELD: 3103 Alum Rock Avenue.

SENATOR STURGEON: 3103 Alum Rock Avenue.

This address is published in a great many state publications. It is the Health and Safety Committee, Public Health and Safety Committee of the California Senate. In fact, the simplest address would be to address it simply to the State Capitol, and it will be forwarded to San Jose.

With that, thank you ever so much for your courtesy and thanks again for sitting here all day long. I know these seats are much harder than they look.

With that, the hearing is closed.

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